United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Kingman Field Office
2755 Mission Blvd.
Kingman, AZ 86401
www.az.blm.gov

FINDING OF NO SIGNIFICANT IMPACT
FOR
DOI-BLM-AZ-C010-2012-0055 EA AND ASSOCIATED RIGHTS-OF-WAY ACTIONS

The Bureau of Land Management (BLM), Kingman Field Office, has analyzed a proposal from Sierra Resources Group, Inc. (SIERRA), for a Mine Plan of Operations to mine copper oxide from the Chloride Copper Mine on public lands in the Cerbat Mountains, approximately 12 miles northwest of Kingman, Mohave County, Arizona. The overall mine operations area will create less than eleven acres of new disturbance and will re-disturb approximately 150 acres.

SIERRA has submitted a technically complete Mining Plan of Operation as described in 43 Code of Federal Regulations 3809. SIERRA's proposal is called the Chloride Copper Project. SIERRA leases Federal mining claims in good standing and has a right to extract valuable minerals from their claim, as established under the 1872 General Mining Law. In addition, Section 302 of the Federal Land Policy and Management Act of 1976 (FLPMA), as amended (43 U.S.C. 1732) provides the general authority for BLM to manage the public lands under the principles of multiple use and sustained yield in accordance with the land use plans that BLM develops under FLPMA.

Activities proposed for public lands by SIERRA are reasonably incident, constitute substantial regular work, and are reasonably calculated to lead to the extraction and beneficiation of copper. SIERRA's proposed occupancy, equipment, gating, trailers, fences, warning signs, etc, are in compliance with BLM Regulations found at 43 CFR 3715.

Reclamation activities of the Chloride Copper Mine will restore previously disturbed tailings piles and other past mining areas. The reclamation activities are to reduce safety and environmental risks to the public.

A concurrent reclamation plan will be instituted to meet or exceed regulatory requirements, thereby improving site conditions. Reasonable measures to prevent unnecessary or undue degradation of Federal lands during operations and reclamation will be implemented as well. These measures will include the restriction of reclamation activities to disturbed areas (e.g., not obtaining fill or covering materials from undisturbed areas).

Concurrent reclamation at the Mine Site will include:

- Proper contouring of the eastern portion of the open pit as ore is removed from the pit area.
- Proper contouring of existing overburden areas where the low grade ore is stored as it is removed.
- As much as possible, covering of the old mill tailings with existing overburden.

- Covering and contouring of the heap leach pad.
- Removal of the concrete-asbestos pipeline in the north and back-fill of the area.

Subsequent to commissioning of the mine substation, UniSource Energy Services has announced future plans to:

- Remove and reclaim a portion of the three-phase power line from the north (AZPHX 034352) in Sections 10, 15, 22, 23, and 26.
- Remove and reclaim the entirety of the single phase power line to the south (AZA 020658) in Section 22.

In addition to the proposed mining operations analyzed in the attached Environmental Assessment (EA) DOI-BLM-AZ-C010-2012-0055, rights-of-way actions would be to assign Right-of-Way AZA 000740 for water pipelines to SIERRA and amend it to incorporate two water wells. The BLM would also amend Right-of-Way AZA 031567 for an electric distribution line to the well locations to supply power for pumping. These actions would be under the authority of Title V of FLPMA.

The proposed action and the no action alternative are described within the attached EA DOI-BLM-AZ-C010-2012-0055. The EA is tiered to and in conformance with the Kingman Field Office Resource Management Plan (RMP) and Record of Decision (March 1995). The above-referenced document may be viewed at the Kingman Field Office during normal business hours or on the Arizona BLM website http://www.blm.gov/az/st/en.html.

The proposed action would assure that no significant adverse impacts would occur to the human environment.

The proposed action does not significantly affect energy supply, distribution, and/or use and therefore a Statement of Adverse Energy Impact is not required.

On the basis of the information contained in the EA, and all other information available to me as is summarized above, it is my determination that the Proposed Action does not constitute a major Federal Action affecting the quality of the human environment. Therefore, an Environmental Impact Statement is unnecessary and will not be prepared.

_____ _____

Ruben A. Sánchez Date
Kingman Field Manager

United States Department of the Interior

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Kingman Field Office
2755 Mission Blvd.
Kingman, AZ 86401
www.az.blm.gov

Decision Record
for the
Proposed Chloride Copper Mine Project,
Mine Site Occupancy AZA 35805, and Associated Rights of Way Actions
DOI-BLM-AZ-C010-2012-0055-EA

Decision

It is my decision to select the proposed action described in the Environmental Assessment DOI-BLM-AZ-C010-2012-0055-EA, which evaluates a Sierra Resources Group, Inc. (SIERRA) proposal for the Chloride Copper Mine in the Cerbat Mountains as an open pit copper oxide mine within the existing disturbed footprint of a previously operating mine. It is also my decision to offer and approve rights-of-way actions described below pursuant to Title V of Federal Land Policy and Management Act (FLPMA)of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761). The lands affected by my decision are described below:

Gila and Salt River Meridian, Mohave County, Arizona
T. 23 N., R. 18 W.,
Sections 15, 22, and 27, *portions of*

SIERRA's proposal called the Chloride Copper Project will mine approximately 1,385,000 tons of copper ore. The Project proposes removing approximately 1500 tons of ore per day for 3 years. Mining operations will excavate and transport copper ore from an open pit to an on-site processing facility.

The overall mine operations area will create less than 11 acres of new disturbance and will re-disturb less than 150 acres. A decision letter from BLM approving the mining Plan of Operations is required before beginning mining operations. An approved reclamation bond and all required State of Arizona permits are required.

Activities proposed for public lands by SIERRA are reasonably incident, constitute substantial regular work, and are reasonably calculated to lead to the extraction and beneficiation of copper. SIERRA's proposed occupancy, equipment, gating, trailers, fences, warning signs, etc, are in compliance with BLM regulations found at 43 CFR 3715.

SIERRA has made application for the assignment and amendment of Right-of-Way AZA 000740 for a water pipeline. The amendment would incorporate two water wells into the existing right-of-way. The wells and pipeline would be used for SIERRA's mining activities. UNS Electric, Inc (UNSE) has made application to amend Right-of-Way AZA 031567 to extend an electric distribution line to the two wells to supply power for water pumps.

Under SIERRA's proposed Mining Plan of Operations a 69 kV electric transmission line would be extended onto the mine property where it would terminate at a substation which would reduce the voltage to useable levels. This would replace the need for two of UNSE's electric lines currently serving the mine. The rights-of-way for these are serialized as AZA 020658 and AZPHX 034352. Upon the completion of the transmission line and substation UNSE would decommission all of the powerline authorized under AZA 020658 and a portion of the powerline authorized under AZA 034352. Upon decommissioning UNSE would request the relinquishment of the powerlines' rights-of-way.

Reclamation activities of the Chloride Copper Mine will restore previously disturbed tailings piles and other past mining areas. The reclamation activities are to reduce safety and environmental risks to the public.

Rationale for Decision

The rationale for my decision can be supported by the Chloride Copper Project Environmental Assessment DOI-BLM-AZ-C010-2012-0055-EA and the Finding of No Significant Impact. This decision is in conformance with the 1995 Kingman Field Office Resource Management Plan (RMP) and Record of Decision (ROD).
This operation will help satisfy the national demand for these minerals, and help to stimulate the local economy.

Stipulations and Mitigation Consideration

Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

If in connection with operations under this authorization, any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001) are discovered, the holder shall stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify the authorized officer. The holder shall continue to protect the immediate area of the discovery until notified by the authorized officer that operations may resume.

The holder shall protect all survey monuments found within the project area. Survey monuments include but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the authorized officer and the

respective installing authority if known. Where General Land Office or Bureau of Land Management right-of-way monuments or references are obliterated during operations, the holder shall secure the services of a registered land surveyor or Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the *Manual of Surveying Instructions for the Survey of Public Lands of the United States*, latest edition. The holder shall record such survey in the appropriate county and send a copy to the authorized officer. If the Bureau cadastral surveyors or other Federal surveyors are used to restore the disturbed survey monument, the holder shall be responsible for the survey cost.

The operator shall clean all heavy equipment (power or high pressure cleaning) of all mud, dirt and plant parts prior to moving equipment onto public lands.

The operator shall identify a road maintenance program which will include monitoring for noxious weeds. If the operator identifies any noxious weeds the operator shall notify the authorized officer immediately. A treatment program shall be identified and the operator shall be responsible for weed abatement.

Various mitigation measures and concurrent reclamation as discussed in the previous sections will be implemented during operation of the Project. Major elements of the reclamation and closure plan are dictated by the regulatory requirements contained in the Arizona Mined Land Reclamation Act, BLM regulations, and the Arizona Department of Environmental Quality Aquifer Protection Permit. The concurrent reclamation approach will result in incremental reclamation as mining operations progress.

It is expected that the reclamation measures will be effective in controlling the potential for unacceptable residual contamination that could come in contact with humans or the environment. Should monitoring indicate that supplemental mitigation measures are required to adequately protect humans and the environment, additional Best Management Practices and other appropriate mitigation measures will be identified and discussed with the appropriate agencies to develop and implement a mitigation plan. ***Table 3 (of the EA)*** summarizes resources with the potential to be impacted by the Project and the development and operating practices that will be used to minimize those impacts. ***Table 3*** also describes the operations and post operations monitoring programs that will be implemented to provide information on the effectiveness of operations in controlling impacts to resources.

For stipulations and mitigation considerations for the rights-of-way actions refer to the attached amended grants and decommission plan.

Monitoring

Monitoring of the project will be performed by BLM in accordance with the serialized case file AZA 35805, regulations found in 43 CFR 3809, and guidance found in BLM Manual 3809. The BLM Manual states that compliance inspections shall be performed at least twice a year.

TABLE 3 – POTENTIAL ENVIRONMENTAL MITIGATION AND MONITORING PRACTICES	
RESOURCE CONCERN OR ISSUE	**PRACTICE**
MITIGATION	
FINDING CULTURAL RESOURCES NOT PREVIOUSLY IDENTIFIED	TRAIN WORKERS TO RECOGNIZE AND AVOID CULTURAL RESOURCES AND IF A POTENTIAL RESOURCE IS ENCOUNTERED TO STOP WORK IN THE VICINITY UNTIL A PROFESSIONAL ARCHAEOLOGIST CAN EVALUATE THE CULTURAL RESOURCE AND IDENTIFY AN APPROPRIATE MITIGATION PLAN.
HARM TO MIGRATORY BIRDS	MIGRATORY BIRD SURVEYS WILL BE CONDUCTED PRIOR TO INSTALLATION OF
HARM TO MIGRATORY BIRDS	PERCH DISCOURAGERS (OR OTHER DESIGN FEATURES) WILL BE INSTALLED ON
HARM TO MIGRATORY BIRDS	INSTALL NETTING OR FLOATING BALL COVERS ON PONDS IF MIGRATORY BIRDS IF PRESENT
HARM TO THREATENED OR ENDANGERED SPECIES	IF THREATENED OR ENDANGERED SPECIES ARE FOUND DURING MONITORING (SEE BELOW), MITIGATION MEASURES (SUCH AS BUFFER ZONES AROUND PROTECTED ANIMAL BURROWS OR IDENTIFIED PLANT HABITAT) WILL BE IMPLEMENTED.
ACCESS TO THE MINE SITE	IF APPROPRIATE, PROVIDE RANCHER WITH A KEY TO THE GATE LOCKS.
OPERATIONAL MONITORING	
AIR QUALITY	CONDUCT AIR QUALITY MONITORING DURING OPERATIONS AS NECESSARY PER THE ADEQ AIR QUALITY PERMIT.
PRESENCE OF INVASIVE OR NOXIOUS WEEDS	INSPECTION FOR INVASIVE AND NOXIOUS WEEDS WILL BE CONDUCTED TWICE YEARLY DURING THE WETTER PERIODS OF THE YEAR.
PRESENCE OF MIGRATORY BIRDS	CONDUCT MIGRATORY BIRD MONITORING DURING OPERATIONS FOR BIRD USE OF PONDS AND INSTALL MITIGATION MEASURES SUCH AS NETTING OR FLOATING BALL COVERS IF PRESENT.
PRESENCE OF THREATENED OR ENDANGERED SPECIES	CONDUCT ROUTINE BIOLOGICAL MONITORING TO VERIFY NO THREATENED OR ENDANGERED SPECIES
POST-OPERATIONAL MONITORING	
SUCCESS OF RE-VEGETATION PROGRAM	TWICE YEARLY AFTER CESSATION OF OPERATIONS, SURVEY RE-VEGETATED AREAS UNTIL THE AREA REACHES 70% RE-VEGETATION.
PRESENCE OF INVASIVE OR NOXIOUS WEEDS	INSPECTION FOR INVASIVE AND NOXIOUS WEEDS WILL BE CONDUCTED TWICE YEARLY.

Periodic monitoring of the rights-of-way actions would be conducted to ensure compliance with the terms, conditions, and stipulations of the rights-of-way actions.

Appeal Information

In accordance with 43 CFR Part 4, and the attached Form 1842-1, any person whose interest is adversely affected by a final decision of the authorized officer may appeal the decision for the purpose of a hearing before an administrative law judge. The appeal must be filed within 30 days after the date the proposed decision becomes final or 30 days after receipt of the final decision. The appeal shall state clearly and concisely the reason(s) why the appellant thinks the final decision of the authorized officer is wrong.

If you decide to appeal, your Notice of Appeal (NOA), must be filed in writing and in accordance with Form 1842-1 (enclosed) at the Kingman Field Office, 2755 Mission Blvd., Kingman, Arizona 86401, and with Office of the Solicitor (Department of the Interior, Office of the Field Solicitor, Sandra Day O'Connor U.S. Court House #404, 401 West Washington Street SPC44, Phoenix, Arizona 85003-2151).

The required Statement of Reasons (SOR; see 43 CFR 4.412) may be filed with the NOA or, if not, it must be filed with the IBLA, Office of Hearings and Appeals, U.S. Department of the Interior, MS 300-QC, Arlington, VA 22203, within 30 days after the NOA was filed (see also required service at 43 CFR 4.413).

The decision, signed by the Field Office Manager, will remain in effect during the appeal unless a stay is granted. If you wish to file a petition pursuant to regulations 43 CFR 4.21 for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for stay must accompany your NOA. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted. Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision shall show sufficient justification based on the following standards:

Standards for Obtaining a Stay

1. The relative harm to the parties if the stay is granted or denied,
2. The likelihood of the appellant's success on the merits,
3. The likelihood of immediate and irreparable harm if the stay is not granted, and
4. Whether the public interest favors granting the stay.

The Proposed Action will have no effect on the President's Energy Policy and a Statement of Adverse Energy Impact is not required.

_____ _____

Ruben A. Sánchez Date
Kingman Field Manager

Attachment: Form 1842-1

Draft Right-of-Way AZA 000740 Amendment #2

Draft Right-of-Way AZA 031567 Amendment #1

Decommission Plan Rights-of-Way AZA 020658 & AZPHX 034352

Form 1842-l
(September 2006)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

INFORMATION ON TAKING APPEALS TO THE INTERIOR BOARD OF LAND APPEALS

DO NOT APPEAL UNLESS
1. This decision is adverse to you AND
2. You believe it is incorrect

IF YOU APPEAL, THE FOLLOWING PROCEDURES MUST BE FOLLOWED

1. NOTICE OF APPEAL..... A person who wishes to appeal to the Interior Board of Land Appeals must file in the office of the officer who made the decision (not the Interior Board of Land Appeals) a notice that he wishes to appeal. A person served with the decision being appealed must transmit the *Notice of Appeal* in time for it to be filed in the office where it is required to be filed within 30 days after the date of service. If a decision is published in the FEDERAL REGISTER, a person not served with the decision must transmit a *Notice of Appeal* in time for it to be filed within 30 days after the date of publication (43 CFR 4.411 and 4.413).

2. WHERE TO FILE

NOTICE OF APPEAL	BUREAU OF LAND MANAGEMENT, KINGMAN FIELD OFFICE, 2755 MISSION BLVD., KINGMAN, AZ 86401
WITH COPY TO..... SOLICITOR	FIELD SOLICITOR, U.S. DEPARTMENT OF THE INTERIOR, SANDRA DAY O'CONNOR U.S.COURTHOUSE, SUITE 404, 401 WEST WASHINGTON STREET, SPC 44, PHOENIX, AZ 85003-2151

3. STATEMENT OF REASONS- Within 30 days after filing the *Notice of Appeal,* file a complete statement of the reasons why you are appealing. This must be filed with the United States Department of the Interior, Office of Hearings and Appeals, Interior Board of Land Appeals, 801 N. Quincy Street, MS 300-QC, Arlington, Virginia 22203. If you fully stated your reasons for appealing when filing the Notice *of Appeal,* no additional statement is necessary (43 CFR 4.412 and 4.413).

WITH COPY TO SOLICITOR	FIELD SOLICITOR, U.S. DEPARTMENT OF THE INTERIOR, SANDRA DAY O'CONNOR U.S. COURTHOUSE, SUITE 404, 401 WEST WASHINGTON STREET, SPC 44, PHOENIX, AZ 85003-2151

4. ADVERSE PARTIES Within 15 days after each document is filed, each adverse party named in the decision and the Regional Solicitor or Field Solicitor having jurisdiction over the State in which the appeal arose must be served with a copy of: (a) the *Notice of Appeal,* (b) the Statement of Reasons, and (c) any other documents filed (43 CFR 4.413).

5. PROOF OF SERVICE Within 15 days after any document is served on an adverse party, file proof of that service with the United States Department of the Interior, Office of Hearings and Appeals, Interior Board of Land Appeals, 801 N. Quincy Street, MS 300-QC, Arlington, Virginia 22203. This may consist of a certified or registered mail "Return Receipt Card" signed by the adverse party (43 CFR 4.40l(c)).

6. REQUEST FOR STAY Except where program-specific regulations place this decision in full force and effect or provide for an automatic stay, the decision becomes effective upon the expiration of the time allowed for filing an appeal unless a petition for a stay is timely filed together with a *Notice of Appeal* (43 CFR 4.21). If you wish to file a petition for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Interior Board of Land Appeals, the petition for a stay must accompany your *Notice of Appeal* (43 CFR 4.21 or 43 CFR 2801.10 or 43 CFR 2881.10). A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the *Notice of Appeal* and Petition for a Stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay. Except as otherwise provided by law or other pertinent regulations, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards: **(I)** the relative harm to the parties if the stay is granted or denied, (2) the likelihood of the appellant's success on the merits, (3) the likelihood of immediate and irreparable harm if the stay is not granted, and (4) whether the public interest favors granting the stay.

Unless these procedures are followed, your appeal will be subject to dismissal (43 CFR 4.402). Be certain that all communications are identified by serial number of the case being appealed.

NOTE: A document is not filed until it is actually received in the proper office (43 CFR 4.401 (a)). See 43 CFR Part 4, Subpart B for general rules relating to procedures and practice involving appeals.

(Continued on page 2)

43 CFR SUBPART 1821-GENERAL INFORMATION

Sec. 1821.10 Where are BLM offices located? (a) In addition to the Headquarters Office in Washington, D.C. and seven national level support and service centers, BLM operates 12 State Offices each having several subsidiary offices called Field Offices. The addresses of the State Offices can be found in the most recent edition of 43 CFR 1821.10. The State Office geographical areas of jurisdiction are as follows:

STATE OFFICES AND AREAS OF JURISDICTION:

Alaska State Office ----------	Alaska
Arizona State Office ---------	Arizona
California State Office-------	California
Colorado State Office -------	Colorado
Eastern States Office ----------	Arkansas, Iowa, Louisiana, Minnesota, Missouri and, all States east of the Mississippi River
Idaho State Office ----------	Idaho
Montana State Office --------	Montana, North Dakota and South Dakota
Nevada State Office ---------	Nevada
New Mexico State Office ---	New Mexico, Kansas, Oklahoma and Texas
Oregon State Office ---------	Oregon and Washington
Utah State Office----------	Utah
Wyoming State Office -------	Wyoming and Nebraska

(b) A list of the names, addresses, and geographical areas of jurisdiction of all Field Offices of the Bureau of Land Management can be obtained at the above addresses or any office of the Bureau of Land Management, including the Washington Office, Bureau of Land Management, 1849 C Street, NW, Washington, DC 20240.

2013

CHLORIDE COPPER PROJECT
ENVIRONMENTAL ASSESSMENT

Sierra Resources Group, Inc.

12/20/2013

CHLORIDE COPPER PROJECT
MOHAVE COUNTY, ARIZONA
ENVIRONMENTAL ASSESSMENT
DOI-BLM-AZ-CO10-2012-0055-EA

Prepared for:

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
KINGMAN FIELD OFFICE
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On Behalf of:

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TABLE OF CONTENTS

TABLES

FIQURES

LIST OF ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
EA	Environmental Assessment
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
ft	feet
KFO	Kingman Field Office
kV	kilovolt
mg/L	milligrams per liter
MPO	Mine Plan of Operation and Reclamation Plan
NEPA	National Environmental Policy Act
RMP	Resource Management Plan
ROW	Rights-of-Way
SIERRA	Sierra Resource Group, Inc.
SWCA	SWCA Environmental Consultants

1.0 Introduction

The focus of this Environmental Assessment (EA) is to describe and address potential impacts to the natural and human environment from the action proposed by Sierra Resource Group Inc. (SIERRA), namely to develop, conduct, and close (reclaim) mining operations at the Chloride Copper Mine Site (the Mine Site). SIERRA is requesting approval to conduct mining activities that include approval of associated Rights-of-Way (ROW) for utilities.

Additional documents that are important components of the Bureau of Land Management (BLM) Kingman Field Office (KFO) decision process are the Mine Plan of Operation and Reclamation Plan (MPO) and rights-of-way applications and supporting documents.

This EA describes the human and natural environment and how each of these environments may be affected by Project activities. The EA will identify and describe potential environmental concerns. It will analyze these potential concerns to determine if mitigation is necessary and, if so, how they will be mitigated. ***Sections 2.0 through 5.0*** of the EA present the following:

- Proposed Action and Alternatives
- Affected Environment
- Environmental Impacts
- Consultation and Coordination

This EA will assist the BLM KFO in determining if any significant impacts could result from the proposed action and ensuring that the proposed action is consistent with the BLM KFO's Resource Management Plan/Final Environmental Impact Statement (RMP/FEIS) (BLM, 1993). If it is determined by the BLM KFO that there is no significant environmental impact from the proposed action or that any identified impacts can be mitigated, a Finding of No Significant Impact (FONSI) and Decision Record signed by the authorized officer may be issued.

1.1 Background

The applicant and project proponent, SIERRA, has mining claims in the Walapai Mining District, which is located in an unincorporated part of Mohave County, Arizona, along the western flank of the Cerbat Mountains, approximately 15 miles northwest of the city of Kingman. The Project's location is shown on ***Figure 1-1*** and in more detail on ***Figure 1-2***. SIERRA has secured 37 unpatented lode claims and 14 mill-site claims in portions of Sections 22, 23, 26 and 27 of Township 23 North, Range 18 West, Gila & Salt River Meridian. The claims cover the area of past mining activities, approximately 160 acres, as is

shown on ***Figures 1-3 and 1-4***. In brief, the proposed Project includes the following activities that are described in the Chloride Copper Project MPO:

- Mine copper oxide ore obtained from previously disturbed areas including the existing ore stockpiles, old mill tailings, heap leach pad, and upper open pit (MPO Section 1.1.1).
- Construct a new leaching system and re-start the existing solvent extraction/ electrowinning plant to recover copper from a leachate concentrate (MPO Section 1.1.1).
- Reclaim previous surface disturbance and safety hazards at the Mine Site that resulted from past operations of the Emerald Isle Mine (MPO Section 1.1.3).
- Install a new 69 kilovolt (kV) electric power line and substation to operate the Mine (MPO Section 2.3.1).
- Install a new 12 kV electric power line across public land to the mine's water supply wells, located two miles north of the Mine Site (MPO Section 3.0).
- Re-establish water supply lines and the access road to the Mine Site (MPO Section 3.0).
- Reclaim disturbed portions of the Mine Site and safety hazards, with the exception of the open pit, which will remain fenced following operations (MPO Section 8.0).
- Decommission a single phase powerline and a portion of a three phase powerline that would be replaced by the proposed 69 kV transmission line.

1.2 Purpose and Need for the Proposed Action

The proposed action is to provide Sierra Resources with authorized use of public land managed by the Bureau of Land Management (BLM) to develop a Copper Mine in compliance with the Federal Land Policy and Management Act (FLPMA), BLM Locatable Mineral regulations, and other applicable federal laws. The need for the proposed action regarding the MPO is to respond to a 43 Code of Federal Regulation (CFR) 3809 Mine Plan of Operations request submitted by Sierra Resources to construct, operate, maintain, and terminate a Copper Mine and associated infrastructure on Public Lands administered by the BLM Kingman Field Office. The need for the proposed action regarding the ROW applications is to respond to 43 CFR 2800 ROW applications to construct operte, maintain, and terminate facilities on Public Land in accordance with FLPMA and applicable regulations. BLM will decide whether to approve the Mine Plan of Operations, or to approve the Mine Plan of Operations with modifications. Also, the BLM w ill decide to assign, amend, and/or grant the ROWs, deny them, or assign, amend, and/or grant the ROWs with modifications.

The project will provide copper for community development and meet Bureau of Land Management's (BLM) responsibility under Federal Land Policy Management Act (FLPMA) and the Mining Law of 1872.

It is BLM policy to make locatable minerals available to the public wherever it is environmentally acceptable. Locatable minerals removal is authorized in accordance with appropriate laws, regulations and policies in conformance with the approved Resource Management Plan (RMP).

This EA provides the basis for the selection of an alternative for the proposed Project in accordance

with the following responsibilities of the BLM:

- Approve occupancy of public lands.
- Grant or deny ROWs.
- Provide approval of mining.
- Accept reclamation plans.

The operation will be contained mostly within the footprint of past mining activities. Approximately 11 acres of new surface disturbance or incursions onto undisturbed areas would occur at the Mine Site.

1.3 Conformance with Land Use Plans

The Kingman Resource Area RMP/FEIS (BLM, 1993) defines appropriate uses for public lands and resources administered by the BLM in the Kingman area, including the proposed operations associated with the Project. BLM policy in general management areas, per the RMP/FEIS, is to "…encourage the orderly development of mineral resources while protecting, to the extent practicable, non-mineral resources…" (BLM, 1993). This includes the management of all mineral exploration and development in a manner that will "…prevent unnecessary environmental degradation." The RMP/FEIS (BLM, 1993) discusses locatable minerals throughout the document, most notably on Pages 20, 158, and 552 (Appendix 30). This proposed mining operation conforms to the land use plan.

Pages 66 and 67 of the RMP/FEIS (BLM, 1993) includes the statement "All other minor rights-of-way would be evaluated through the environmental review process and granted or rejected on a case by case basis. Existing rights-of-way would be used when possible to minimize surface disturbance." The existing and proposed ROWs connected to the proposed mining operation are considered minor. The proposed ROW for the powerline to the northern wells as described in the Proposed Action portion of this document would not be considered as conforming with the RMP/FEIS (BLM, 1993) due to the close proximity to a portion of ROW AZPHX 34325 which, with an additional approximate 2,000 feet of powerline, could supply electricity to the wells thus negating the need for the 4,800 feet of proposed powerline. However, as part of the Proposed Action approximately 13,000 feet of this powerline in proximity to the wells would be decommissioned, thereby eliminating this non-conformancy issue.

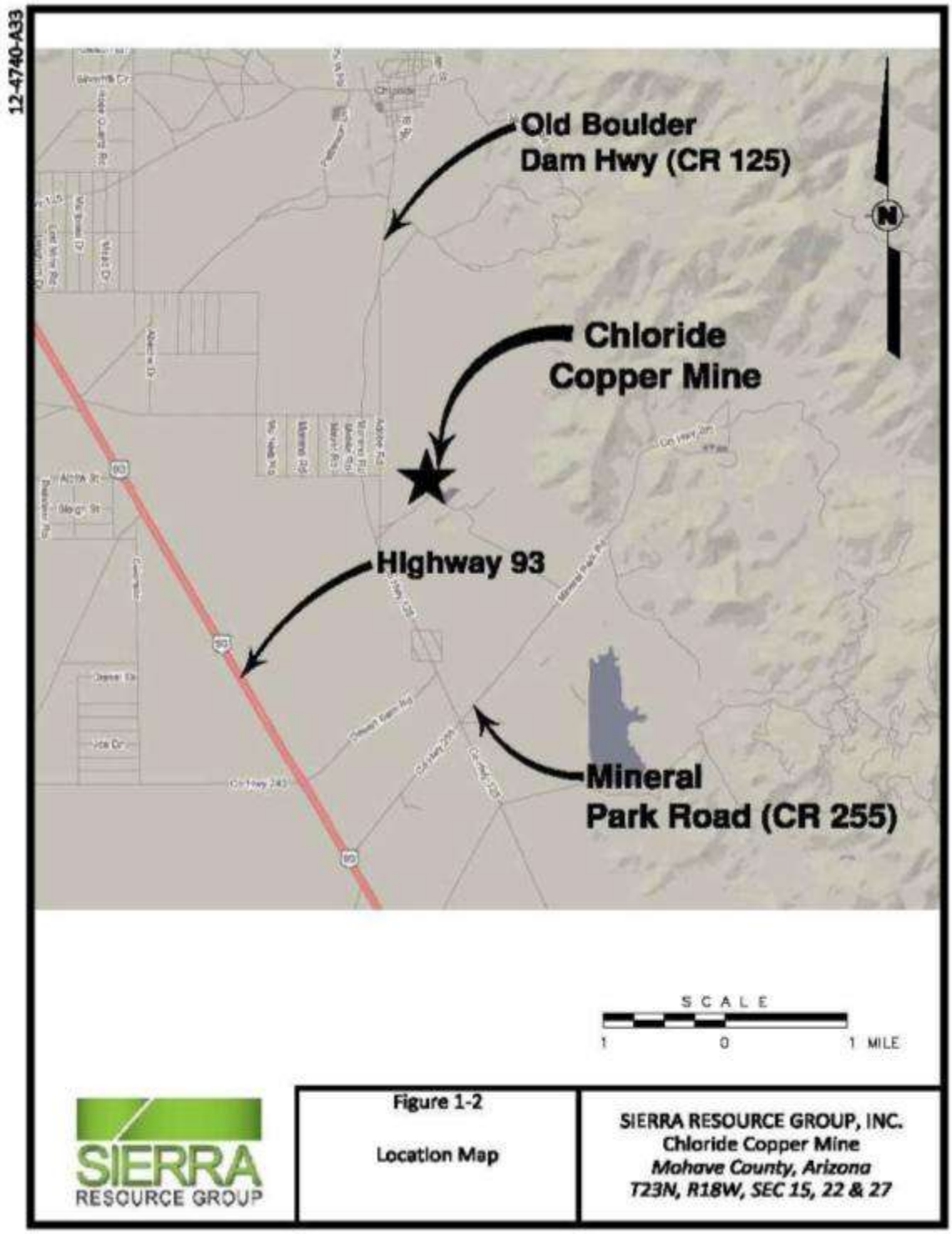
1.4 Related Environmental Reports and NEPA-Relevant Documents

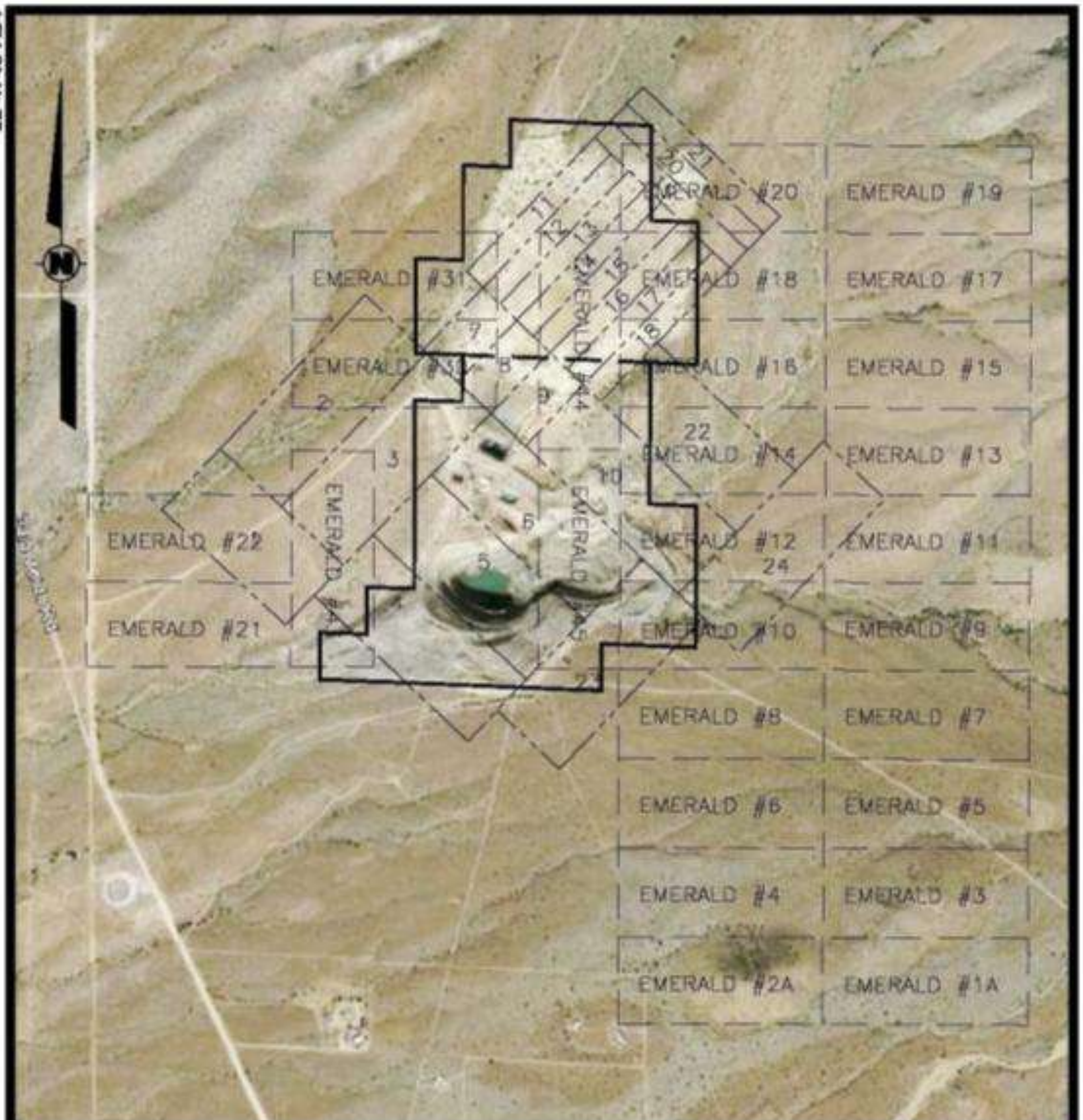
This EA is tiered to the KFO RMP that was prepared to direct management of Federal surface and mineral estates in compliance with BLM's planning regulations (43 CFR 1600) under the authority of FLPMA. The RMP meets the requirements of the National Environmental Policy Act (NEPA), the *Council on Environmental Quality Regulations for Implementing the NEPA* (43 CFR 1500-1508), and the requirements of BLM's NEPA *Handbook 1790-1* (BLM, 2008), and was subsequently approved with a Record of Decision in March 1995 (BLM, 1995).

12-4740-A32

Figure 1-1 General Location Map	SIERRA RESOURCE GROUP, INC. Chloride Copper Mine *Mohave County, Arizona* *T23N, R18W, SEC 15, 22 & 27*

SIERRA RESOURCE GROUP


12-4740-A33
Old Boulder
Dam Hwy (CR 125)
N
Chloride
Copper Mine
Highway 93
Mineral
Park Road (CR 255)
SCALE
1 0 1 MILE
SIERRA
RESOURCE GROUP
Figure 1-2
Location Map
SIERRA RESOURCE GROUP, INC.
Chloride Copper Mine
Mohave County, Arizona
T23N, R18W, SEC 15, 22 & 27



Reference:
Technical Report on the Emerald Isle Copper Deposit, Arizona USA. Prepared for STE-Genevieve Resources LTD. Roscoe Postle Associates Inc, March 10, 2006.

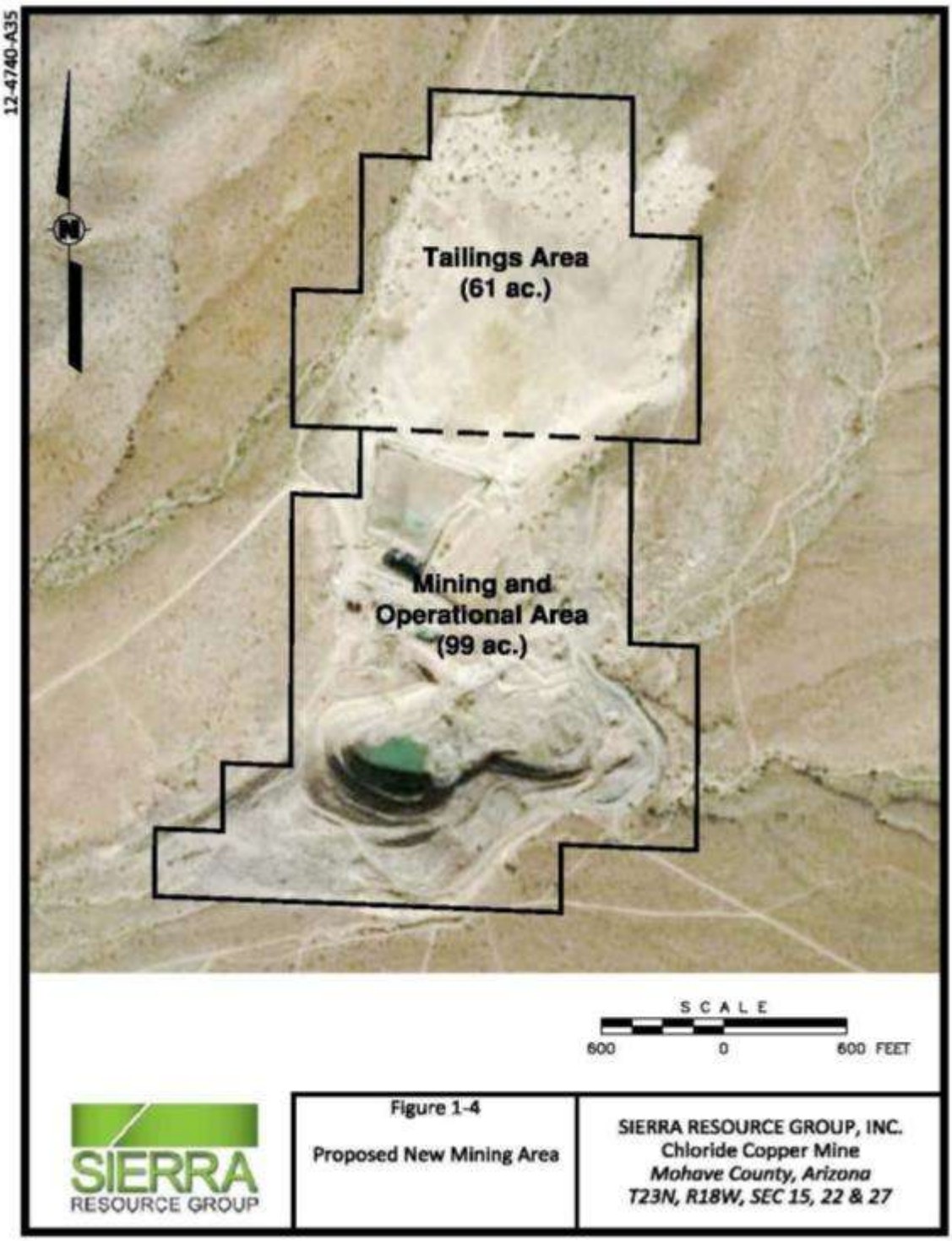
SCALE
1000 0 1000 FEET

SIERRA RESOURCE GROUP

Figure 1-3

Project Area Claims

SIERRA RESOURCE GROUP, INC.
Chloride Copper Mine
Mohave County, Arizona
T23N, R18W, SEC 15, 22 & 27


12-4740-A35
N
Tailings Area
(61 ac.)
Mining and
Operational Area
(99 ac.)
SCALE
600
0
600 FEET
SIERRA
RESOURCE GROUP
Figure 1-4
Proposed New Mining Area
SIERRA RESOURCE GROUP, INC.
Chloride Copper Mine
Mohave County, Arizona
T23N, R18W, SEC 15, 22 & 27

2.0 Proposed Action and Alternatives

This Section describes the Proposed Action and No Action Alternative, as well as briefly discussing alternatives that were considered but dismissed.

2.1 Proposed Action

SIERRA proposes to renew mining activities at the Chloride Copper Mine Site as described in the MPO (Novmber , 2013)

This proposed action includes:

- Compliance with mining laws (43 CFR 3715) for the BLM to grant occupancy for SIERRA to conduct mining operations at the Chloride Mine site.
- Mining operations to excavate and transport readily available copper oxide ore from sources surrounding the open pit at the Mine Site and removal of copper oxide ore from the eastern portion of the open pit.
- Construction and operation of a new copper liberation and concentrating system using state of practice heap leach technology.
- The refurbishment of an existing solvent extraction/electrowinning plant to recover elemental copper.
- Utility line (water, power, and telephone) construction to the Mine Site.
- Reclamation activities during and after mining operations to restore previously disturbed ground from past mining activities (no reclamation activities have been performed by previous owners) and areas disturbed as a result of planned mining activities.

The following subsections provide more detail on the proposed action. Further information can also be found in the MPO.

2.1.1 Mining and Processing Activities

Operations at the Mine Site will be contained mostly within the footprint of past mining activities, and will include approximately 11 acres of new surface disturbance or incursions onto undisturbed areas (***Figures 2-1 and 2-1A***). The planned operation will result in the extraction of approximately 1,385,000 tons (1.03 million cubic yards) of readily available ore. This readily available ore is located in the eastern open pit, low grade ore stockpiles, a portion of the old mill tailings, and possibly the existing heap leach pad.

2.1.2 Utilities, Rights-of-Way, and Access to the Project Site

In order to conduct mining and processing operations, SIERRA is requesting an assignment of a ROW for a water pipeline (serial no. AZA 740) and an amendment to include two wells and access roads. Utilities include water, electricity, and telephone. SIERRA is requesting that previously established utility corridors and the access road either on or near the Mine Site be re-established. SIERRA is also applying for necessary permits and clearances from other Federal and State of Arizona agencies. The

utility and access requests are shown on ***Figure 2-2*** and summarized in the following subsections. UniSource Energy Services (UES) has applied for an amendment to ROW AZA 31567 to extend a 12 kV powerline to supply electricity to the northern wells.

In the event the wells do not supply enough water to the mine, SIERRA would obtain water from the Chloride Domestic Water Improvement District's (CDWID) water pipeline paralleling the Old Boulder Dam Highway and construct the West Water Pipeline discussed below in Section 2.1.2.3. In order to tie into CDWID's pipeline, the right-of-way for this line (AZA 32473) would need to be amended to allow for this.

2.1.2.1 Proposed Access Road

The existing access road is from the Old Boulder Dam Highway to the mine headquarters. The road would be within the southwestern portion of Section 22, Township 23 North, Range 18 West, Gila & Salt River Meridian. The access road is approximately 15 feet in width. The improvements would include two "pull-off" areas measuring 30 feet wide and 70 feet long to allow for vehicles to pass. The road is approximately 3,065 feet long and currently occupies approximately 1.06 acres. The proposed improvements to the access road would result in an area that occupies approximately 1.4 acres.

2.1.2.2 Proposed Northern Pipeline Right-of-Way

The existing northern pipeline is from the mine water tank to the two existing wells (Well #1 and Well #2) north of the Mine Site. The northern water line would be within Sections 22 and 15, Township 23 North, Range 18 West, Gila & Salt River Meridian. The majority of the northern water line currently exists, with one portion needing to be re-constructed. The northern water line corridor is proposed to be approximately 2.35 miles (12,408 feet) long and 20 feet in width. Also proposed, is a 20 foot X 20 foot surface disturbance footprint at each well for potential housing for a generator. The proposed northern water line disturbance would be approximately 8.3 acres.

2.1.2.3 Proposed West Water Line

The proposed west water line corridor is from the Old Boulder Dam Highway to the mine water tank. The west water line corridor would be within the southwestern portion of Section 22, Township 23 North, Range 18 West, Gila & Salt River Meridian. The west water line does not currently exist and is proposed to be approximately 2,860 feet long and 20 feet in width. The proposed west water line disturbance would be approximately 6.3 acres.

2.1.2.4 Proposed Southern Pipeline

The proposed southern water line is from the mine water tank to the southern boundary of BLM property (the southern section line of Section 22, Township 23 North, Range 18 West, Gila & Salt River Meridian). The proposed pipeline corridor crosses previously disturbed ground from past mining activities. The corridor would tie in to a pipeline from one well (PAT-1) located on private lands in Section 27 of the same township (Figure 2-3). The southern water line does not currently exist and is proposed to be approximately 2,239 feet long and 20 feet in width. The proposed southern water corridor area would be approximately 2.8 acres.

2.1.2.5 Proposed Telephone Line

The existing telephone line is from the Old Boulder Dam Highway to the mine headquarters. The telephone line is within the southwestern portion of Section 22, Township 23 North, Range 18 West, Gila & Salt River Meridian. The telephone line is approximately 2,824 feet long and disturbance for servicing the telephone line would be 50 feet in width. The proposed telephone line corridor would be approximately 3.2 acres.

2.1.2.6 Proposed 69 kV Power Line

The proposed 69 kV power line is from the metering station to the proposed substation at the Mine Site. The power line would be within Section 22, Township 23 North, Range 18 West, Gila & Salt River Meridian. The power line does not currently exist but would be located on previous disturbed ground and within the proposed operations area. UES would relinquish the portion of ROW AZA 33319 from the metering station to the ROW's northwestern terminus. UES holds ROW AZA 33319 for a 69 kV powerline which is proposed to be the eventual source of electricity for the mine. This powerline currently exists into the mine to within approximately 500 feet of where it would terminate at a proposed substation, which would reduce the voltage for uses at the mine. ROW AZA 33319 allows for a realigning of approximately 1,000 feet of the powerline within the mine property to avoid proposed facilities. This realignment would be within Section 22, Township 23 North, Range 18 West, Gila & Salt River Meridian,affecting approximately 2.3 acres, however this would be within previous disturbed ground and within the proposed operations area.

A metering station is proposed to be installed at the edge of the mine property. UES intends to relinquish the portion of ROW AZA 33319 from the metering station to the ROW's northwestern terminus, whereupon SIERRA would own and operate that portion and the substation.

2.1.2.7 Access to Existing Wells

The existing wells and pipelines for the Project are accessed along existing service roads and are shown on ***Figure 2-3***.

2.1.2.8 State Permitting Requirements

A number of permits will be obtained as necessary from the Arizona Department of Environmental Quality. These include an Aquifer Protection Permit, an Air Quality Permit, and an Arizona Pollutant Discharge Elimination System permit related to stormwater. Mine development will begin as soon as the necessary Federal and State permits have been obtained, the NEPA process is completed, and equipment can be mobilized.

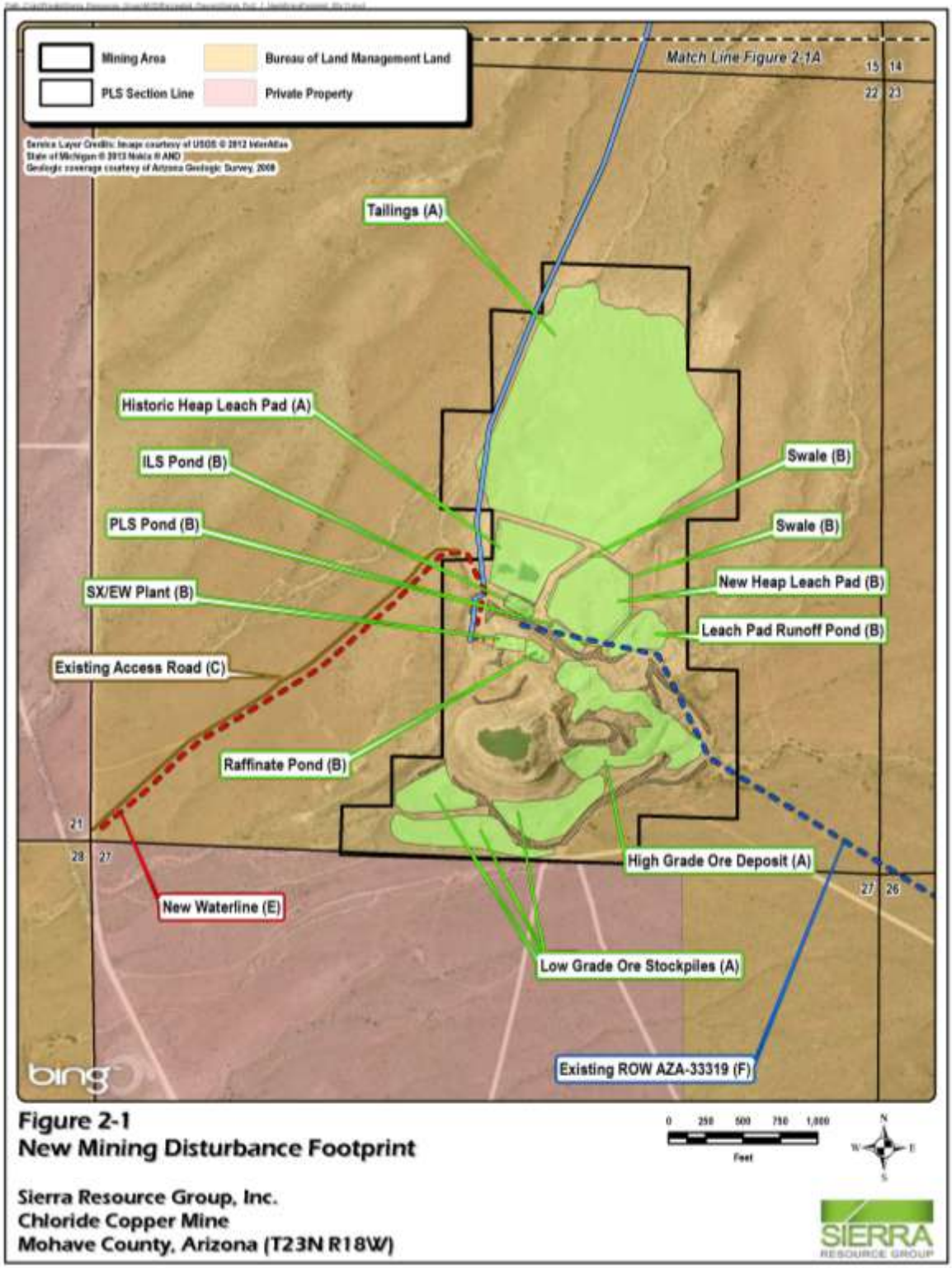


Figure 2-1
New Mining Disturbance Footprint

Sierra Resource Group, Inc.
Chloride Copper Mine
Mohave County, Arizona (T23N R18W)

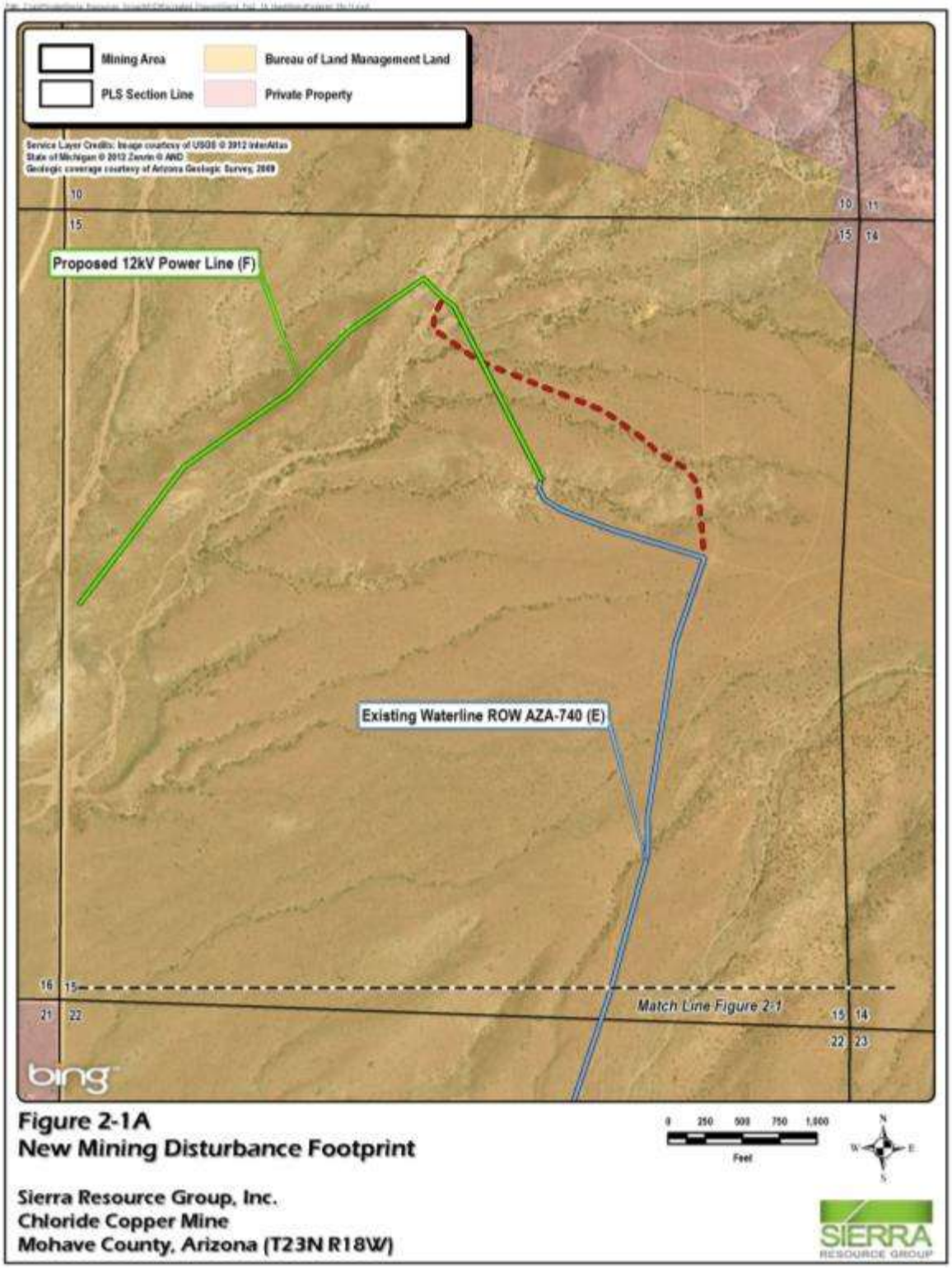


Figure 2-1A
New Mining Disturbance Footprint

Sierra Resource Group, Inc.
Chloride Copper Mine
Mohave County, Arizona (T23N R18W)

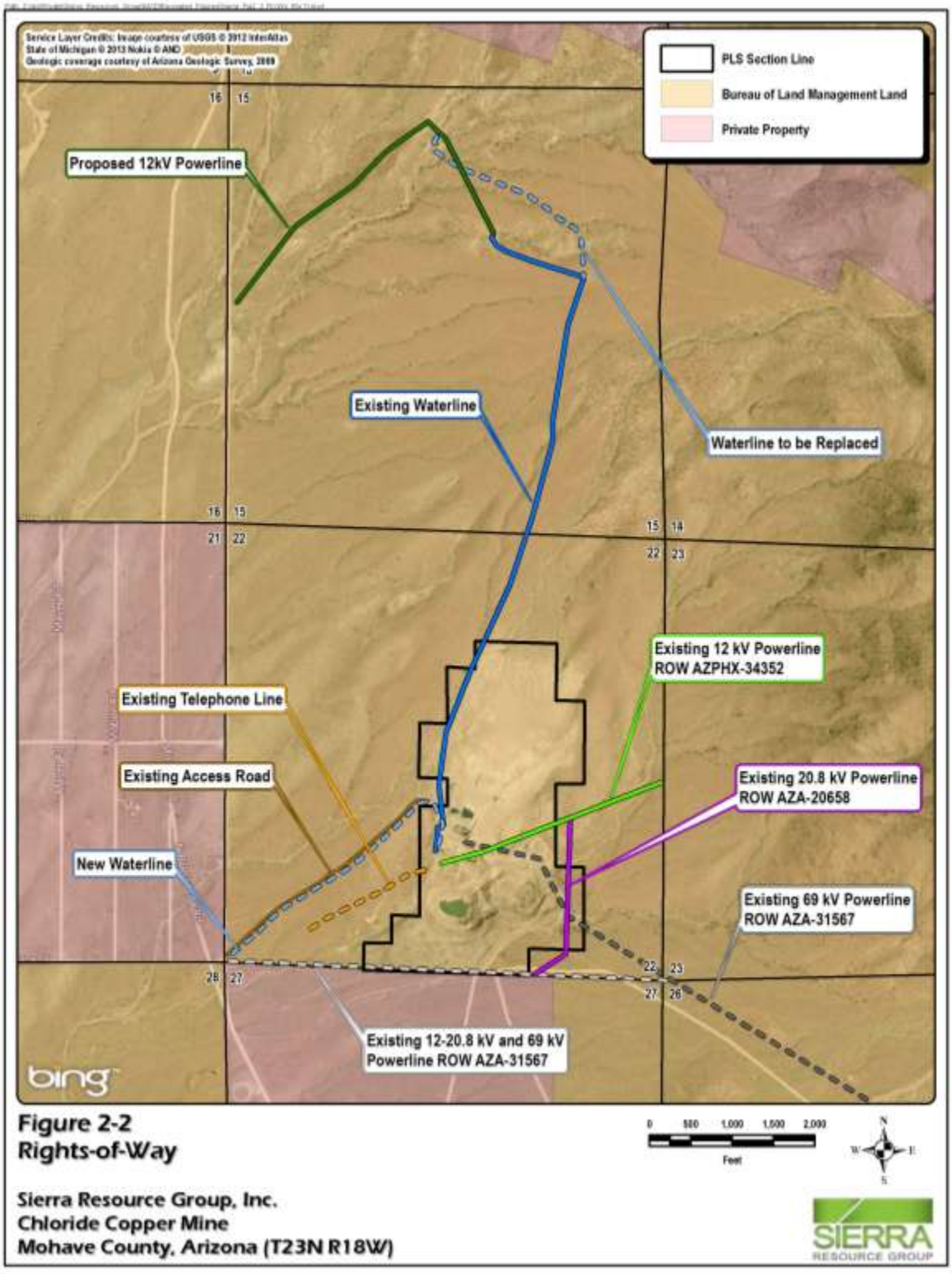


Figure 2-2
Rights-of-Way

Sierra Resource Group, Inc.
Chloride Copper Mine
Mohave County, Arizona (T23N R18W)

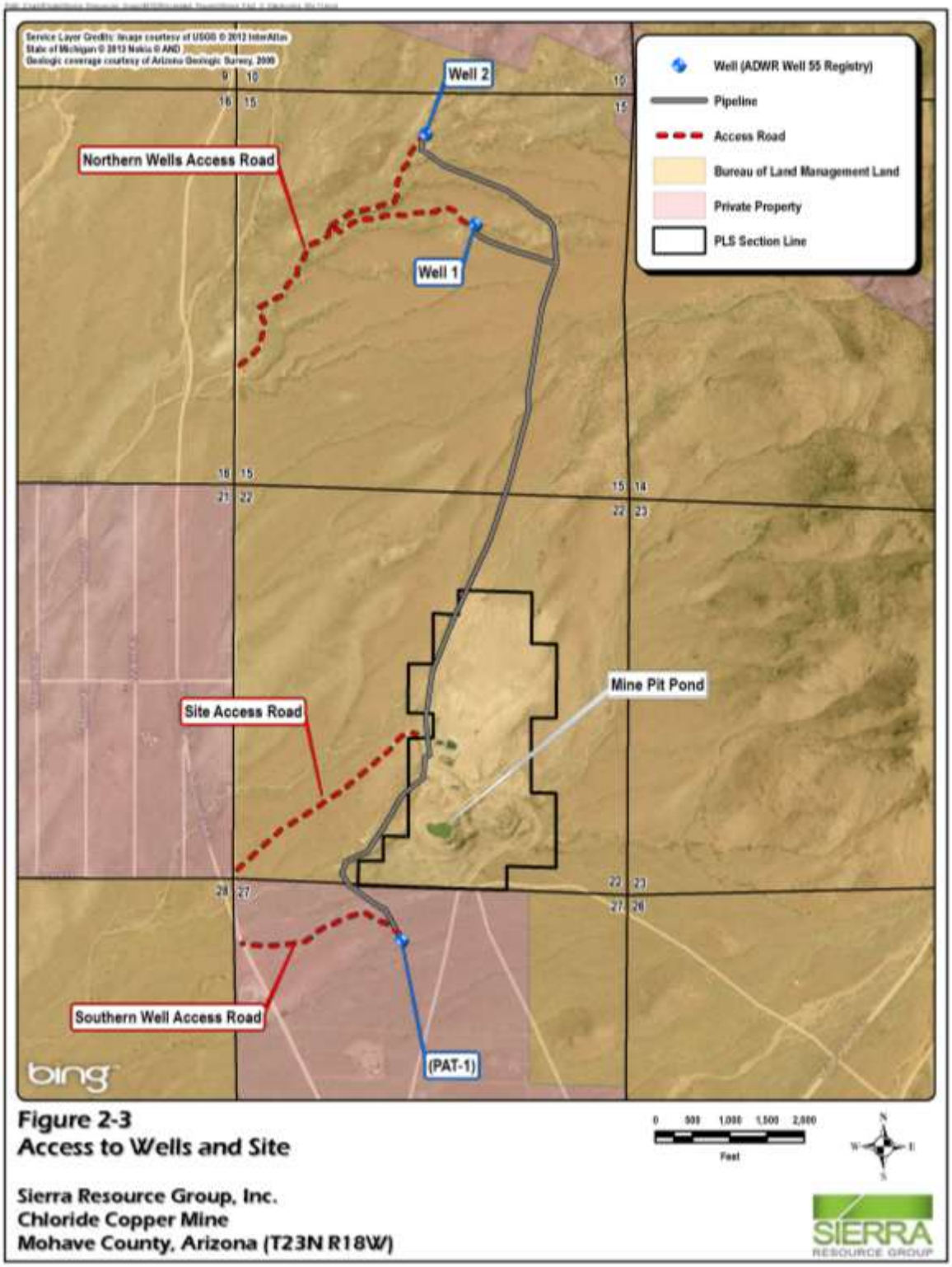


Figure 2-3
Access to Wells and Site

Sierra Resource Group, Inc.
Chloride Copper Mine
Mohave County, Arizona (T23N R18W)

2.1.3 Reclamation

A concurrent reclamation plan will be instituted to meet or exceed regulatory requirements, thereby improving site conditions. Reasonable measures to prevent unnecessary or undue degradation of Federal lands during operations and reclamation will be implemented as well. These measures will include the restriction of reclamation activities to disturbed areas (e.g., not obtaining fill or covering materials from undisturbed areas).

Concurrent reclamation at the Mine Site will include:

- Proper contouring of the eastern portion of the open pit as ore is removed from the pit area.
- Proper contouring of existing overburden areas where the low grade ore is stored as it is removed.
- As much as possible, covering of the old mill tailings with existing overburden.
- Covering and contouring of the heap leach pad.
- Removal of the concrete-asbestos pipeline in the north and back-fill of the area.
- Reseeding with native species.

Subsequent to commissioning of the mine substation, UniSource Energy Services has announced future plans to:

- Remove and reclaim a portion of the three-phase power line from the north (PHX 34352) in Sections 10, 15, 22, 23, and 26.
- Remove and reclaim the entirety of the single phase power line to the south (AZA 20658) in Section 22.

Major elements of the reclamation and closure plan are dictated by regulatory requirements contained in the Arizona Mined Land Reclamation Act, BLM regulations, and the aquifer protection permit program. Although other regulatory requirements may contribute mitigation elements, these three regulatory programs form the framework for the reclamation plan. Disturbed areas will be reclaimed to the standard described in Section 3809.1-3(d) of 43 CFR 3809.

Following reclamation, hiking, hunting, and other off-road activities may occur at the Mine Site. Restrictions will only exist for the open pit area, which will be fenced to protect against falls and other hazards.

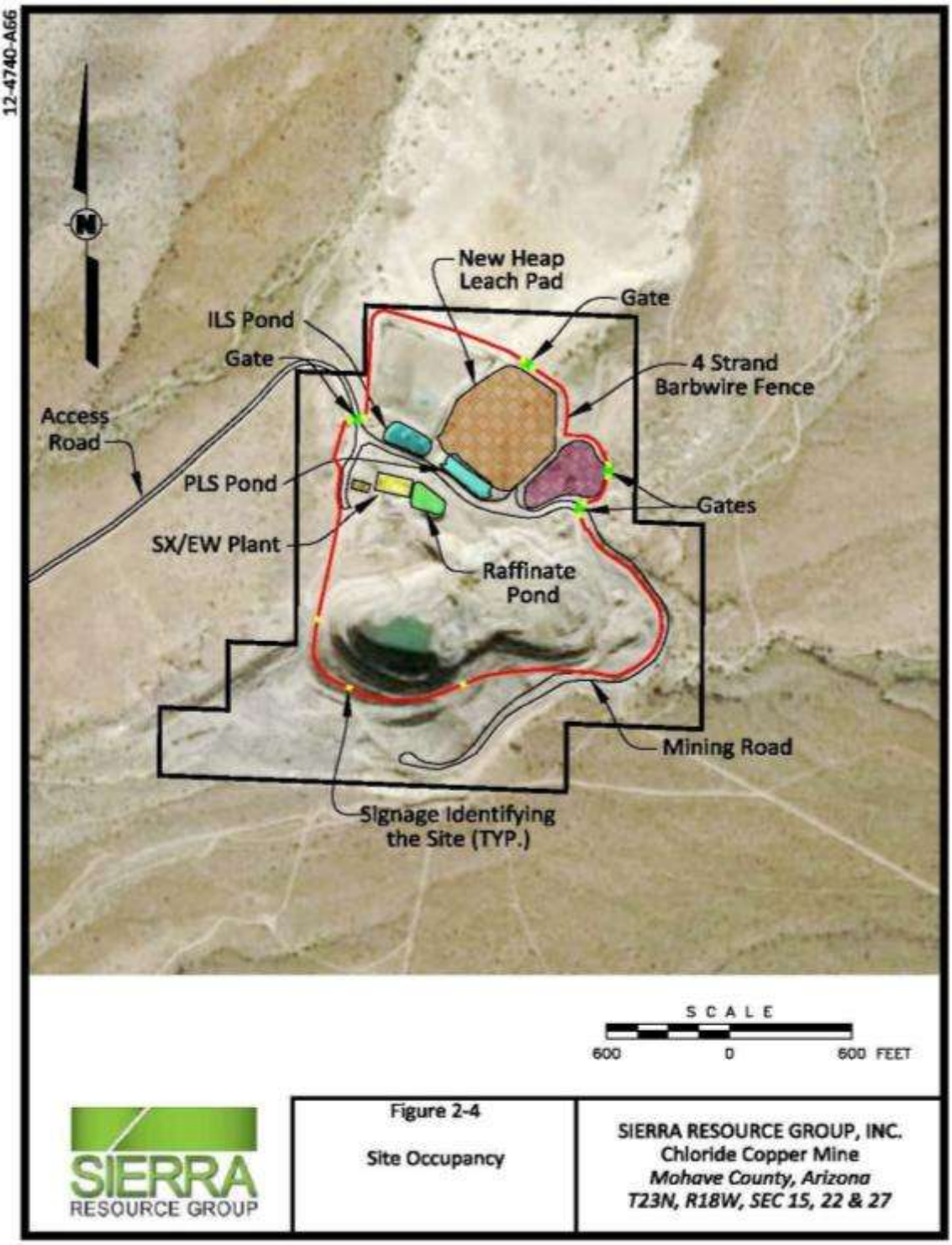
An environmental monitoring plan will also be implemented based on the requirements set forth by BLM and the Arizona Department of Environmental Quality. This program will be implemented during operations and will continue after closure for a specified period of time.

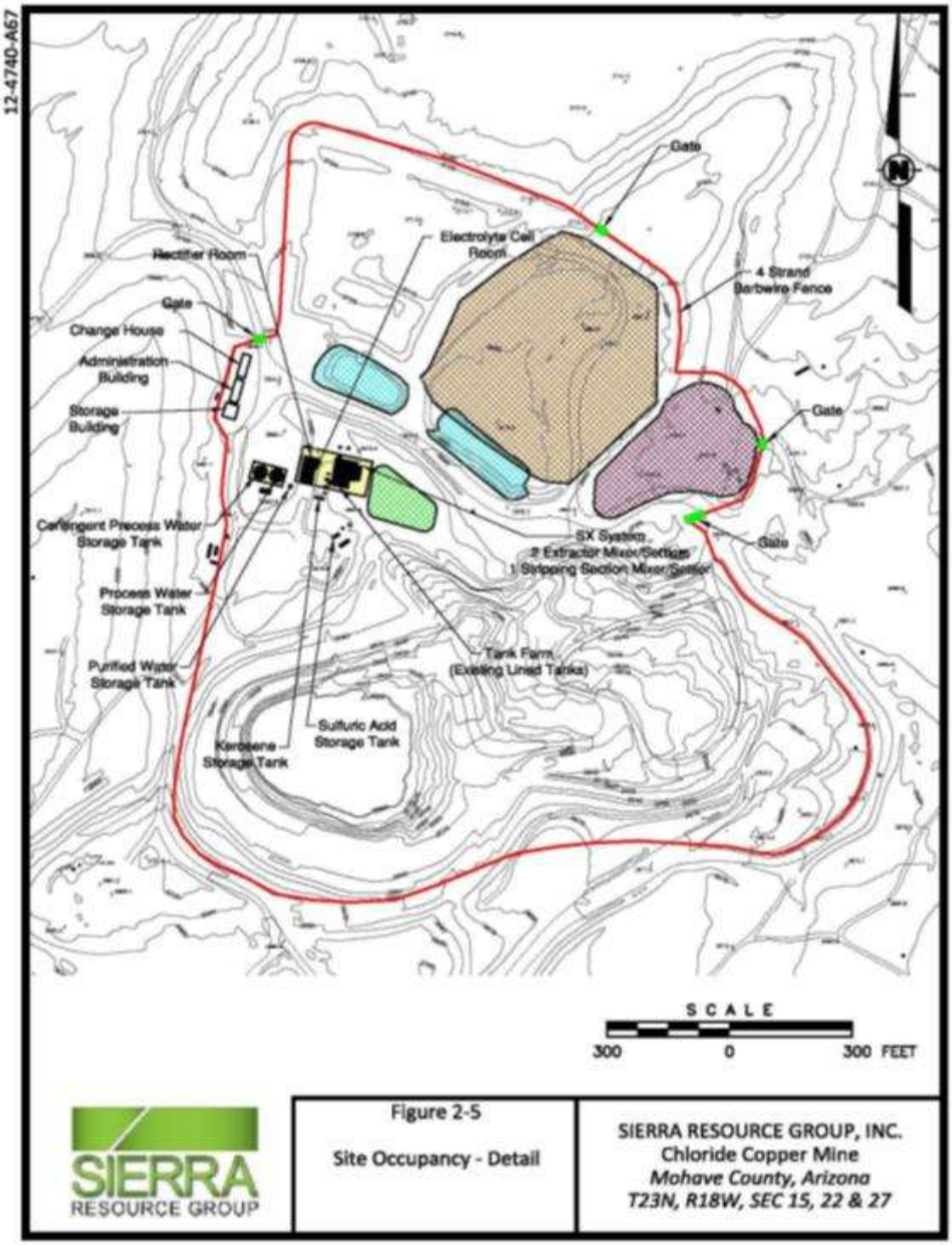
2.1.4 Occupancy

Occupancy will require mining equipment, a heap leach system, a copper recovery processing plant and ancillary facilities to be located on site, within the disturbed area, during mining operations (***Figures 2-4 and 2-5***). The equipment, facilities, and buildings will serve no other purpose. They will remain at the Mine Site until mining is complete. The area of operations will be fenced and gated with warning signs posted. ***Table 1*** presents the areas of planned disturbance that include past acreage of disturbance and planned new acreage of disturbance. Most of the new area of disturbance is linear and is related to the utility corridors and access road described in ***Section 2.1.2***.

TABLE 1– SUMMARY OF DISTURBED AREAS FOR PROPOSED PROJECT

Area Description	Previously Disturbed (acres)	New Disturbance (acres)
Planned Re-Disturbance of Historic Disturbance	139.2	
Disturbance for Northern Pipeline and Wells (new disturbance)		8.3
Disturbance for Southern Waterline Corridor (new disturbance)		2.8
Disturbance for Powerline to Northern Wells (New Disturbance)		0.25
disturbance for powerline to proposed substation (69 kV)	2.3	
Disturbance for Western Waterline Corridor (previously disturbed)	6.3	
Disturbance for Access Road (previously disturbed)	1.4	
Disturbance for Telephone Line Corridor (previously disturbed)	3.2	
TOTAL	152.4	11.4


12-4740-A66
N
New Heap Leach Pad
Gate
ILS Pond
Gate
4 Strand Barbwire Fence
Access Road
PLS Pond
Gates
SX/EW Plant
Raffinate Pond
Mining Road
Signage Identifying the Site (TYP.)
SCALE
600
0
600 FEET
SIERRA RESOURCE GROUP
Figure 2-4
Site Occupancy
SIERRA RESOURCE GROUP, INC.
Chloride Copper Mine
Mohave County, Arizona
T23N, R18W, SEC 15, 22 & 27


12-4740-A67
Gate
Electrolyte Cell Room
Rectifier Room
4 Strand Barbwire Fence
Gate
Change House
Administration Building
Storage Building
Gate
Contingent Process Water Storage Tank
SX System
2 Extraction Mixer/Settlers
1 Stripping Section Mixer/Settler
Gate
Process Water Storage Tank
Tank Farm (Existing Lined Tanks)
Purified Water Storage Tank
Sulfuric Acid Storage Tank
Kerosene Storage Tank
SCALE
300 0 300 FEET
SIERRA RESOURCE GROUP
Figure 2-5
Site Occupancy - Detail
SIERRA RESOURCE GROUP, INC.
Chloride Copper Mine
Mohave County, Arizona
T23N, R18W, SEC 15, 22 & 27

2.2 No Action Alternative

Under the No Action Alternative, the BLM would not issue permits for SIERRA to resume mining and reclamation activities at the Mine Site, nor grant ROWs for utility corridors to service the Mine Site. This alternative would preclude the development of the Project on the public and private lands in question, and the existing ore reserves and stockpiles at the Mine Site would remain undeveloped. A No Action Alternative assumes maintenance of existing conditions at the Mine Site and in the Project area would not continue. The site would remain in its current condition.

2.3 Alternatives Considered But Dismissed

NEPA requires alternatives including the proposed action to be considered (USDOE, 2013). This includes a brief discussion of alternatives which were eliminated from further study as well as the reason for which the alternative was dismissed (USDOE, 2013).

One alternative considered, but eliminated from further detailed analysis was backfilling the pit at the completion of mining of the ore-body. At a cost of $1.50 per cubic yard of material moved and an open pit volume of approximately 862,640 cubic yards it would cost approximately $1.3 million to backfill the pit. Because this amount would increase the costs for reclamation ($993,999) by 130%, it was determined that this proposed alternative was not economically feasible. Backfilling the pit would also render any remaining mineral reserves in the lower reaches and below the pit and laterally extending from the pit significantly less accessible, as this material would have to be removed.

A second alternative considered, but eliminated from further detailed analysis was the reduction of pit slope walls to a 2:1 configuration. At a cost of $0.45 per cubic yard of material moved and a pit wall volume of approximately 1,008,000 cubic yards to be scaled, it would cost approximately $453,600 to reduce the steepness of the pit walls. Because this amount would increase the costs for reclamation ($993,999) by 46%, it was determined that this proposed alternative was not economically feasible. In addition, the total disturbance for the proposed operations would increase by over eight acres. Similar to the case with backfilling the pit (alternative 1 above), further mining development may uncover a buried ore deposit that might be economical someday if the pit were to remain open.

3.0 Affected Environment

This Section provides a description of the existing environment at the Chloride Copper Mine Site by resource type. The descriptions are intended to provide a context for baseline environment conditions as applicable to the Proposed Action, which will thus enable evaluation of potential impacts of project activities on the human and natural environment. The four elements of the Proposed Action that are considered are the following:

- Approve occupancy of public lands.
- Grant or deny ROWs.
- Provide approval of mining.
- Accept reclamation plans.

The following resources concerns and issues are specifically discussed:

- Air Quality, including Climate Change
- Cultural Resources
- Environmental Justice and Socioeconomics
- Hazardous Materials
- Human Health and Public Safety
- Invasive and Non-Native Species
- Land Use
- Minerals
- Water Quality and Quantity
- Migratory Birds
- Native American Religious Concerns
- Paleontological Resources
- Recreation
- Soils
- Threatened and Endangered Species
- Travel Management
- Visual Resource Management
- Vegetation
- Wildlife
- Wild Horses/Burros
- Wilderness Concerns

3.1 General Setting

The Project area is located on a west facing alluvial fan of the Cerbat Mountains in the Sacramento Valley, at an elevation between 3,650 and 3,750 ft. Physiographic ally, the Project area is located in the Mojave Desert, a transitional area separating the Great Basin Desert to the north and the Sonoran Desert to the south. Annual precipitation in the area is approximately 10 inches (ADWR, 2010). U.S. Geological Survey Gap Analysis Program Land Cover Inventories (USGS, 2013) indicate that the Project area consists almost entirely of semi-desert, with some small patches of forest and woodland east of the mine. The Project area is also approximately 2,000 ft west of a boundary with areas designated as shrubland and grassland. However, the majority of the Project area consists of land previously disturbed by mining.

3.2 Air Quality

Air quality at and around the Project Site is generally quite good, with visibility typically more than 10 miles. Mohave County has not been designated by the U.S. Environmental Protection Agency or the Arizona Department of Environmental Quality as a non-attainment area for any criteria air pollutants (USEPA, 2012). Nonetheless, local residents have informed both agencies about the existence of fugitive dust that blows (mostly from the southwest to the northeast) from numerous sources in the Cerbat foothills. Currently, the old mill tailings and heap leach pad are not contoured or covered properly and could be a source for fugitive dust emissions.

3.2.1 Climate Change

The Governor's Policy on Climate Change, Executive Order 2010-14, recognizes the importance of reducing greenhouse gas emissions while maintaining Arizona's economic growth and competitiveness. The Governor's policy supports Arizona's continued collaboration in regional and national endeavors to advance clean energy and implement cost-effective solutions to climate change while safeguarding its unique state interests.

The Arizona Department of Environmental Quality plays an important role in ensuring clean air, safe water, and better protected land. The goal of the Arizona Department of Environmental Quality is to implement pragmatic, pro-active approaches to climate change by advancing clean renewable energy, smart growth, fuel efficient transportation and energy efficiency policies and practices that make sense for Arizona.

The operator has the responsibility for ensuring that all operations are properly permitted with the appropriate agencies and that the operations are in compliance with all mobile and stationary source guidelines. The Arizona Air Quality Division within the Arizona Department of Environmental Quality has jurisdiction over present and future sources of air pollution. The Project is sensitive to climate change issues in its use of Best Management Practices and diesel-based equipment.

Greenhouse gas emissions at the Mine Site are likely to be associated only with stationary diesel equipment. This equipment will consist of a portable generator to power the crushing and screening operations and other facilities. Haul trucks would also continue to use diesel fuel.

3.2 Cultural Resources

3.2.2 Database Search

In 2008, SWCA was engaged to perform a cultural resources survey of the Mine Site for the owners SGV Resources, Inc. Before fieldwork, archaeological records were reviewed at the Arizona State Historic Preservation Office and BLM KFO to determine the location of any previous archaeological work or recorded archaeological sites in and around the Project area. SWCA also consulted the AZSITE database, which includes records from the Arizona State Museum, Arizona State University, and the BLM, for information on previously conducted surveys and previously recorded sites in the Project area and within a 1-mile radius of the Project area. This search indicated that three archaeological surveys had been conducted within 1 mile of the Project area, but that no archaeological sites had been documented in or adjacent to the Project area.

3.2.3 Field Survey

Following the database search, SWCA completed a Class III Archaeological Survey of approximately 350 acres of BLM land at and surrounding the Mine Site. The survey was conducted under BLM Permit No. AZ-000114.BLM, Fieldwork Authorization No. BLM-KFO-08-20. The conclusions of this survey report are summarized as follows:

> An archaeological survey of the project area resulted in the identification of three sites and 27 Individual Occurrences. Site types include historic artifact scatters and mine feature remnants.
>
> Because the three sites do not meet the required criteria for eligibility for the National Register of Historic Places and no cultural resources were observed within the Project area, no further archaeological work is recommended. Accordingly, SWCA concludes that development of the 350-acre property will have no effect on historic properties in the Project area. However, if previously undocumented buried cultural resources are identified during ground-disturbing activities, all work in the immediate vicinity of the discovery should stop until the area can be evaluated by a professional archaeologist.

More recently, in January 2013, SWCA performed a Class III cultural resources survey of the water supply pipeline ROWs for the Chloride Copper Mine Site (SWCA, 2013). This report is on file with the BLM KFO. No historic properties (properties listed in or eligible for the National Register of Historic Places) were found within the surveyed ROWs.

3.3 Environmental Justice and Socioeconomics

3.3.1 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (EO, 1994), directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The U.S. Environmental Protection Agency (2013) defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies.

Mohave County and the City of Kingman had minority populations of 7.5 and 7.8%, respectively, in 2011 (the most recent year for which records are published) (USCB, 2013a; USCB, 2013b). By comparison, the State had a minority population of approximately 15.5% in 2011 (USCB, 2013a). No specific concentration of minorities occurs in the area surrounding the Project Site. Consequently, no disproportionate environmental impacts on minority or low income populations have been identified.

One of the common means of tracking income levels is by total income for a household and, by extension, comparison to established Federal poverty levels. In 2011, the state of Arizona had 16.2% of its population below the poverty level (USCB, 2013a), Mohave County had 16.8% of the population below the poverty level (USCB, 2013a), and Kingman had 13.7% of its population below the poverty level (USCB, 2013b). The median household income in Mohave County in 2011 was $40,573, a value below the state median of $50,752 (USCB, 2013a).

More specifically, according to the 2010 US Census, Chloride had a population of 271 comprised primarily of non-hispanic /latino ethnicities (260). Hispanic-latino was the next highest number of individuals (11) followed by native Hawaiian and Pacific Islander (4) (U.S. Census Bureau, 2013). The median household income in Chloride in 2010 was $31,484 (Cubit, 2013), and the income (gross) poverty level for the US at that time for a household with four persons was $28,668 (USDA, 2013). Given these facts, and assuming similar conditions for 2013, the prospects of environmental justice issues related to impacts from the proposed operations on low income and/or minority populations are insignificant.

There will be more people employed due to construction of the access road and utility corridors and operations of the mine.

3.3.2 Socioeconomics

Mohave County, although the second largest county by area in Arizona, had a 2010 (the most recent census year) population of 200,186 (USCB, 2013a), mostly located in Lake Havasu City (52,527) (USCB, 2013c), Bullhead City (39,540) (USCB, 2013d), and Kingman (28,068) (USCB, 2013b). From 2000 to 2010, Mohave County's population grew by 29.1 percent (USCB, 2000a; USCB, 2013a).

The Project Site is located in a remote, little-populated portion of northern Mohave County. The nearest (and only) community in the Mine Site area is the historic mining town of Chloride, located approximately four miles to the north. Socioeconomic characteristics of the area are described in the 2010 U.S. Census Report for Zip Code 86431 (the geographic area that encompasses the proposed Mine Site and surroundings including the town of Chloride), which is attached as ***Appendix A***. Total population within Zip Code 86431 in 2010 was 403, fairly evenly divided between males and females, with a median age of 62. Ninety percent of the 86431 population was classified as White, 1.7 percent as Asian, 0.0 percent as Pacific Islander, 0.5 percent as American Indian, and 3.7 percent as Some Other Race or Mixed Race. Approximately 6.0 percent of the population classify themselves as of Hispanic/Latino ethnic origin.

3.4 Hazardous Materials and Waste

Hazardous wastes that may be generated at the facility during mine operations include, but may not be limited to, the following:

- Waste paint materials such as thinners
- Chemical wastes such as acetone from the onsite laboratory
- Chemical wastes from the solvent extraction/electrowinning process
- Sulfuric acid, used (for example) in ore processing
- Kerosene, used as diluent for the extraction solvent

Asbestos-containing materials exist at the Project Site and along the northern pipeline ROW. This pipeline providing water to the mine is composed of asbestos concrete. That portion of the pipeline that is in service will be used and maintained.

3.5 Human Health and Public Safety

As a result of a nearly 100-year history of mining and milling activities under various operators, the Project Site contains numerous features which present safety hazards to the public, livestock, and wildlife. The old mill tailings (pre-1960 mining activities) are exposed to the natural environment and produce fugitive dust during periods of increased wind. If the wind is from the south, this fugitive dust blows in the direction of the town of Chloride. The major safety hazard is a 260-ft deep open pit from past mining activities. The pit can be accessed on an ore haul road from the east; however, the northern, southern, and western walls of the pit are near vertical with very narrow benches. The base of the pit has been filled by inflowing groundwater, resulting in a pool that is over 15 ft deep. This pool currently can be accessed by the public, livestock, and wildlife via an inclined dirt road (the abandoned ore-haul road).

No underground storage tanks are presently at the Mine Site, nor will any be installed as part of the proposed Project. Instead, all fuel and other potentially hazardous liquid materials will be stored in above-ground storage tanks to be installed in support of the proposed Project's mining and milling operations. In addition, numerous scrap metal piles and abandoned equipment remain from previous mining and processing operations, including a highly-acidic pregnant leach solution pond, a high-voltage solvent extraction/electrowinning copper extraction/plating facility, and heap-leaching pads covering several acres. These features pose potential hazards to wildlife (e.g., mule deer, rabbits, birds, etc.), livestock from the BLM grazing allotment, and occasional human visitors such as hunters, all-terrain and off-road vehicle enthusiasts, and amateur mineral collectors.

3.6 Invasive and Non-Native Species

A biological survey of succulents and woody perennials was conducted on Mine Site utility corridors in nine (9) 1,200 ft_2 quadrants in January 2013. No plants listed in the Arizona Department of Agriculture document titled "Prohibited, Regulated and Restricted Noxious Weeds" (AZDA, 2013) were observed at that time.

It is possible that, during operations, vehicles entering the site may inadvertently import invasive weeds or seeds. In this event, normal maintenance activities will be conducted to eradicate weeds from operational areas. Also, areas to be reclaimed will be surveyed for the presence of noxious weeds and they will be eradicated prior to re-seeding.

During reclamation, re-seeding will occur. An appropriate site plant inventory will be obtained from the site biological survey conducted in January 2013. In addition, a reference plant list appropriate for the mine area will be obtained from the National Resources Conservation Service. The two lists will be used together to determine an appropriate seed mix for the Mine Site. Information on the selected seed mix to be used during reclamation will be submitted to the BLM for approval prior to implementation. The seed mix will be chosen to minimize the potential for inclusion of invasive or noxious species.

3.7 Land Use

The predominant landowner in the Project area is the U.S. Government with the land under the jurisdiction of the BLM KFO. The Property occupies public lands under the management of the BLM

KFO and is governed by the KFO's RMP. The Property lies entirely within one of the BLM's RMP-designated areas of high mineral potential, and the Project is consistent with the RMP. Current land use at the Project Site consists of prior mine/mill operations that have not been reclaimed. Livestock grazing via an existing, BLM-issued grazing allotment (Mineral Park 0055) also is an allowed surface use.

Historically, the land has been utilized for mining, recreation, and rangeland. Historic mining activities in the Walapai District of Northern Arizona date back to the early 1860s. Remnants from mine activities on the land surface include lumber, nails, concrete lined settling ponds, mill tailings, exploration cuts, concrete, scrap metal, and areas of past mining disturbance on claims. Construction of new ROWs for the mine will slightly alter the current land use by installation of pipelines and widening of the access road. However, with the exception of the open pit, the Mine Site, including ROWs, will be reclaimed and made available for other uses.

3.8 Minerals

3.8.1 Geologic Setting

Geology in the region consists of Precambrian igneous and metamorphic rocks locally intruded by Mesozoic granitic stocks with associated Tertiary volcanics, overlain by Mesozoic and Quaternary sediment derived from the rocks that form the adjacent highlands. Topography of the Basin and Range is dominated by high-angle normal, range-front faulting, resulting in mountain ranges bounded by northwest trending faults. Topographically-low alluvial basins separate the topographically-high mountain ranges. The thickness of basin-fill generally exceeds 1,000 ft in the central portion of the Sacramento Basin (Freethey et al., 1986).

3.9.1.1 Site Geology

The Project is located on the lower flanks on the western slope of the Cerbat Mountain Range. The geology at the Project Site is composed of Quaternary alluvium, overlying a late-Tertiary Gila Conglomerate dipping to the west. The Gila Conglomerate is mineralized and unconformably overlies a metamorphic basement complex. The relief is low and undulating due to protruding bedrock and erosional dissection. The exposed alluvium reveals poorly sorted, mixed deposits of angular to sub-angular cobbles and boulders (up to 15 ft) in a sand and gravel matrix. The Gila Conglomerate has been cemented by mineralizing solutions to form a blanket of copper oxide mineralization. Due to its proximity to the Mineral Park Copper Molybdenum (Cu-Mo) deposit, it is likely that the copper at the Chloride Copper Mine is the product of dissolution and precipitation. Dissolution of copper from the Ithaca Peak porphyry alteration halo followed by precipitation of copper oxide minerals in the Gila Conglomerate (RPA, 2006).

3.9.1.2 Mineralization at the Mine Site

Three types of copper mineralization are found at the Mine Site as follows:

- The first type is primary fissure vein mineralization containing copper sulfides. This vein was mined in 1917 and 1918.
- The second is blanket-type primary copper mineralization that has been the exploration target and mining site during the past twenty years (RPA, 2006). It occurs within the Gila conglomerate and is reported to consist primarily of tenorite (CuO).

- The third type of mineralization is represented by secondary copper minerals in the form of copper staining, such as malachite ($CuCO_3 \cdot Cu[OH]_2$) and chrysocolla ($CuO \cdot SiO_2 \cdot H2O$). These minerals occur on fracture planes as well as within the lower portion of the alluvium and upper Gila Conglomerate.

Copper mineralization at the Mine Site is hosted by the Gila Conglomerate and is structurally controlled. The copper mineralization has thus far been defined to be contained within a paleochannel some 2,500 ft long and 500 ft to 750 ft wide, with a thickness ranging from 20 ft to 300 ft, averaging more than 100 ft in the form of a mineralized lens.

3.9.2 Overburden

A large stockpile of mined overburden exists on the south side of the open pit. The overburden is principally sand and gravel alluvium free of copper mineralization with the exception of a small portion of igneous rock from the pit bottom. This material is from past mining activities and is generally free of copper mineralization. That part of the overburden that is free of any copper mineralization will be used for covering the heap leach pad and old mill tailings. New mining activities will produce limited overburden; therefore, the principal source of cover material for reclamation purposes will come from the existing stockpiled overburden. Organic material will be added to the alluvium during reclamation activities as very little growth material exists.

3.10 Water Quality and Quantity

3.10.1 Surface Water

The Sacramento Valley (including the greater Project area) is drained by a network of intermittent and ephemeral streams that generally flow westward toward Sacramento Wash, located in the valley center (Anning et al., 2006). These streams generally flow only in response to long duration winter storms, or severe (high intensity) summer thunderstorms (Towne and Freark, 2001). High elevation (mountain) runoff does not typically reach the Sacramento Wash, but instead evaporates or infiltrates streambed sediments, recharging groundwater. Surface discharge from the Sacramento Wash is estimated to be between 500 and 1,000 acre-feet per year near Topock, Arizona (Gillespie and Bentley, 1971; Rascona, 1991).

No intermittent or ephemeral surface waters occur within the proposed Project operations area. The water which has ponded within the open pit on the Mine Site comes from groundwater inflow and, to a lesser extent, runoff from seasonal precipitation, and as such is not subject to regulation as “surface water.” As a result, no jurisdictional waters of the U.S. are present on the Mine Site and no regulation under Section 404 of the Clean Water Act is relevant to this proposed Project.

3.10.2 Groundwater

Water-saturated older alluvial sediments form the principal groundwater aquifer within the Sacramento Valley (Gillespie and Bentley, 1971), to the west of the Chloride Mine. Generally, this older alluvium is composed of moderately consolidated fragments of granite, schist, gneiss, and volcanic rocks in a silty clay matrix.

Groundwater recharge in the Sacramento Valley is mostly from infiltration of streamflow near the apexes of dissected alluvial fans that extend into mountain canyons. Depth to water varies widely, from approximately 1,060 ft below land surface near Kingman, to slightly less than 40 ft below the ground surface near Topock, Arizona (ADWR, 2010). Groundwater movement is from the mountains to the valley floor and down gradient to the Colorado River. This movement generally parallels the flow of Sacramento Wash.

Groundwater in the mine area occurs in two geologic units, Quaternary alluvium and fractured granite. The principal aquifer is the fractured granite that occurs at a depth of 50- 200 feet in the vicinity of the mine. Well logs in the vicinity of the mine show that ground water is primarily found in the fractured granite, and well yields are generally low, on the order of a few gallons per minute to perhaps 20-30 gpm. One exception was noted in a well in T. 23 N., R. 18 W. sec. 27 SESWNE (AZDWR registration number 55-681718) where a yield of 65-75 gallons per minute was recorded by the driller at a well drilled into fractured granite. This well is located approximately one mile south of the Chloride Mine.

3.10.3 Existing Groundwater Quality

Groundwater in the Sacramento Valley Basin is predominantly fresh, based on pH levels and total dissolved solid concentrations, and may generally be described as neutral to slightly alkaline (Towne and Freark, 2001). Groundwater is generally very hard to moderately hard. Nitrate (as nitrogen) in many wells in the valley is reported to be at concentrations greater than 3 milligrams per liter (mg/L) and may indicate some impacts from human activities (agricultural impacts, septic system leaks, etc.). In general, trace elements are not detected in the basin fill aquifer. However, arsenic, boron, chromium, copper, fluoride, selenium, and zinc have been detected at concentrations above Arizona Department of Health Services minimal risk levels in a small percentage of wells (Towne and Freark, 2001). In the vicinity of the town of Chloride, groundwater exceedances of gross alpha, radium-226 and radium-228, total dissolved solids, nitrate, chloride, antimony, sulfate, and manganese have been noted (Towne and Freark, 2001). These exceedances have been linked to a combination of the area geology, historic mining activity, and aging and leaking septic systems (Rosner, 1998).

Water in the pool at the bottom of the open pit at the Mine Site was sampled in March 2012. Laboratory test results indicated an average (from two test samples) pH of 7.65, with total metal concentrations ranging from 1.6 to 87 mg/L

3.10.4 Groundwater Supply and Use

Water consumption related to Project processing activities and dust suppression should be approximately 63 gallons per minute during normal leaching operations. This estimated use is equated with a total annual water consumption of approximately 96 acre-feet (31 million gallons). There will be no discharge of water from the Project. Water will be consumed by saturation of the heap leach pad and evaporation.

Mining operations are expected to obtain water from two existing wells from which SIERRA has rights to withdraw groundwater and one additional well for which SIERRA has made application for their use under an amendment to Right-of-Way AZA 740 as discussed in Section 2.1.2 Two of these wells, Well 1 and Well 2, are located north of the Property and have an existing pipeline connected to the water

tank on site. The other well, PAT-1, is located south of the Mine Site on fee land that SIERRA intends to purchase, and will require a new waterline to be constructed (Figure 2-3). It is expected that the combination of these three wells will supply the estimated 63 gallons per minute of water needed during normal operations. Approximately 20 gallons per minute are expected to come from each of Well 1 and Well 2 for a total of 40 gallons per minute (approximately 63% of the required water). The remaining 23 gallons per minute (approximately 37% of the required water) is expected to be supplied by well PAT-1.

3.11 Migratory Birds

The semi-desert grassland and scrubland community at the Mine Site provides some potential habitat for migratory birds. However, informal observations by the part-time mine security guard/caretaker (i.e., anecdotal evidence) suggest that bird activity on the property is relatively limited, and that migratory waterfowl do not use the existing open pit pond or the abandoned (and rain-filled) pregnant leach solution and raffinate ponds at the Mine Site as resting stops. In addition, various government agency websites, including the U.S. Geological Survey National Prairie Wildlife Research Center, the U.S. Fish and Wildlife Service Migratory Bird Program, and the Arizona Game and Fish Department HabiMap tool, were consulted regarding the presence of migratory bird flyways, and it was determined that the Mine Site does not lie within any migratory bird flyways. Nonetheless, more formal bird observations completed during surveys of the proposed mine and mill activity areas (and associated ROWs) in April, June, and July 2012 and January 2013 reported the presence of ravens, turkey vultures, and red-tailed hawks at the Mine Site. These birds are all listed in, and therefore protected by, the Migratory Bird Treaty Act (50 CFR Part 10.13) (MBTA, 2010). Songbirds and sparrows (unspecified and therefore possibly migratory) were also identified in the surveys.

During the ROW and mine/mill area surveys, no listed Birds of Management Concern or Birds of Conservation Concern (USFWS, 2011) were noted on site. That is, no BLM priority migratory bird species or non-migratory game birds were identified at the mine.

The red-tailed hawks observed at the Mine Site have established several nests along the northern high wall of the open pit, suggesting multi-year (or seasonal) occupation of the Property. Fledged young were observed in one of these nests on April 24, 2012. Nest sites used by ravens have also been identified on the Project Site, near the existing mill buildings.

3.12 Native American Religious Concerns

The Cerbat Mountains and Sacramento Valley are part of the greater Hualapai ancestral homeland. Class III cultural surveys were performed for the Mine Site and the water supply pipeline routes. No indications have been found at the proposed mine/mill site of any Native American artifacts or remains. The Hualapai Tribe has been consulted as part of the National Historic Preservation Act consultation process to ascertain whether they have any concerns regarding continued mining and milling operations at the nearly century-old site. BLM reports that authorized representatives of the Hualapai Tribe recognize that the Mine Site is disturbed.

3.13 Paleontological Resources

The Project area consists of igneous and metamorphic bedrock overlain by unconsolidated and weakly lithified alluvium derived from igneous rocks of the adjacent Cerbat Mountains. The relatively young age of the sediments and the nature of the source rock comprise a geologic setting that is not likely to contain fossils.

3.14 Recreation

Although there is no recreational use of the Mine Site itself, two types of recreational activities are common within the vicinity of the Property. These are:

- Tourism associated with the town of Chloride, Arizona, located four miles to the north. Chloride is a self-proclaimed "ghost town" that features Old-West attractions and an arts community, and outside visitation is an important component of the local economy.
- Off-road vehicle exploration, hiking, and hunting in the Cerbat Mountains and foothills just East of the Project Site.

Two BLM-maintained public campgrounds (Windy Point and Pack Saddle) are located in the Cerbat Mountains five miles northeast of the Project Site, and the area offers a variety of opportunities for off- road vehicles, mountain-bike, and hiking use. The Kingman RMP's recreational resources include hiking/walking trails, mountain biking trails, all-terrain vehicle trails, jeep (4 x 4) trails, and horseback riding trails throughout the region. The secondary roads around the Project Site provide access to the recreational areas.

3.15 Soils

The National Resources Conservation Service identifies three soil complexes within the Project area: Mutang-Dutchflat, Vekol Family Loam, and Fig-Blind-Nodman Complex (NRCS, 2013).

The Mutang series consists of shallow, well-drained, slow permeability soils formed in mixed igneous and metamorphic alluvium, predominantly on pediments. Mutang soils are typically characterized as gravelly sandy loams or gravelly clays (NRCS, 2005). Associated Dutchflat series soils, in turn, are generally sandy, sandy clay, or coarse sandy loams formed in alluvium on fan terraces. In contrast to the Mutang series, Dutchflat soils are typically deep and moderately permeable.

Vekol series soils, located on the southern edge of the Project area, consist of deep, well-drained loams, sandy clay loams, and clays formed in basin fill alluvium. Vekol family soils are generally well-drained, with slow permeability.

The Fig-Blind-Nodman complex (located in the northern water supply area) consists of shallow and very shallow (Fig and Nodman series) to very deep (Blind Series) soils formed in mixed igneous and metamorphic colluvium and alluvium on hill slopes.

Much of the Mine Site is characterized by open excavations or areas of mine overburden classified by the National Resources Conservation Service as a "Pits-Dumps complex" with little or no soil material (NRCS, 2013). Undisturbed areas on or immediately adjacent to the Property, however, are mapped

almost entirely within the Mutang-Dutchflat soil complex, with small areas in the vicinity of the southern water supply wells and the northern water pipeline characterized as Vekol family soils and Fig-Blind- Nodman complex soils, respectively.

Taxonomically, the Mutang, Dutchflat, Vekol, Blind, and Nodman series soils are Typic Haplargids. Fig series soils are Typic Torriorthents.

3.16 Threatened and Endangered Species

Seventeen plant and 33 animal species designated as threatened, endangered, or sensitive species (i.e., special status species) have been identified (either confirmed and/or verified) within the greater Kingman Resource Area or are considered to have a potential or probable presence within the Kingman Resource Area (BLM, 1993) (***Appendix B***). However, biological surveys conducted on the Mine Site and adjacent ROWs identified no plants or animals from any U.S. Fish and Wildlife Service or U.S. Department of Agriculture sensitive species listings (however, sensitive species of bats frequent the area), or any plant specifically identified in the Arizona Department of Agriculture's "Highly Safeguarded Protected Native Plants" list (AZDA, 2013).

Although not originally listed as a special status species in the Kingman Resource Area, the California Condor is now of considerable concern in northwestern Arizona. This Site is located within the Experimental Non-Essential Range for California Condors. This federally listed endangered species (*Gymnogyps californianus*) was first released in northern Arizona on 12 December 1996. Today, Arizona's California condors primarily travel the Grand Canyon and Colorado River corridor in Arizona and the Kolob-Terrace region of southern Utah (SCWG, 2012).

Arizona's California Condors are known to fly widely, and have been observed in eastern Nevada, southwestern Arizona, east along the Mogollon Rim to the Mexican border, and as far north as Wyoming. As such, California Condors have the potential to occur in the Project area. However, no roosting habitat is present at the Mine Site, and no nests or perching locations have been identified. In addition, no California Condors are known to have been spotted in the vicinity of the Mine Site (B. Smith, personal communication).

3.17 Travel Management

Roads and vehicle access routes to the Mine Site are shown on ***Figure 2-2***. The unpaved Old Boulder Dam Highway (also known as "Second Street" in the town of Chloride) is a secondary road that provides access to the town of Chloride from the north. It is also the only access to the Project Site. This road is designated and maintained by the Mohave County Road Division as County Road 125. According to the Mohave County Engineering Department, daily traffic counts over the past five years along the Old Boulder Dam Highway adjacent to the Project Site have averaged approximately 62 vehicles per day. Direct access to the Mine Site is provided via a poorly-graded, privately-maintained approximately 0.5 mile-long dirt road which connects to the Old Boulder Dam Highway. Based on information provided by the security worker at the Project Site, vehicular traffic visiting the Mine Site has averaged fewer than two vehicles per day over the last four years. Overall, the roads leading to and accessing the Project Site are characterized as low use.

3.18 Visual Resource Management

There are five residences located within one mile of the Mine Site and several other mining operations in the nearby area. The Property is located in an area defined by BLM as Visual Resource Management Class IV (BLM, 1995). In accordance with BLM guidance, Visual Resource Management Class IV areas "…provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements" (BLM, 2003). The existing and proposed mine workings conform to BLM guidance for a Visual Resource Management Class IV designated area.

There are two red water tanks on the Project Site. Existing mine workings at the Mine Site include tailings deposits, mine waste piles, stockpiled ore deposits, an excavated 260-ft deep open pit, leach pad, collection ponds, roads, and facilities for leachate processing. Extensive, un-reclaimed surface disturbance and poorly maintained mill facilities with scattered junk and scrap piles define the current visual character of the landscape within Project claim boundaries. Currently, the heap leach pad is approximately 20 ft high.

3.19 Vegetation

Vegetation in the Project area is characteristic of a semi-desert grassland biotic community; however, because all of the proposed mine/mill area has been disturbed by previous activities, virtually no "native" plant habitat remains. Surface soils on the Mine Site have been mostly disturbed by previous mining activity and consist of degraded conglomerate, quartzite, igneous cobble, and gravel deposits. These materials form the surface soil and substrate and do not provide suitable conditions to support native vegetation (see recent photos in ***Appendix B*** which depict typical ground cover and plant communities found at the Mine Site).

Observed vegetative species on and around the Mine Site include cat-claw acacia (*Acacia greggii*), Ephedra (*Ephedra sp.*), Jimmyweed or burroweed(*Isocoma sp.*), broom snakeweed (*Gutierrezia sarothrae*), buckwheat (*Eriogonum sp*.), mesquite (*Prosopis juliflora*), creosotebush (*Larrea tridentata*), yucca (*Yucca sp*.), several species of prickly pear cactus (*Opuntia sp*.), hedgehog cactus (*Echinocereus sp.*), and cholla cactus (*Cylindropunita sp.*).

Vegetation within the proposed power line corridors is generally representative of that found throughout the Cerbat foothills (see ***Appendix B*** for a detailed description of the vegetation found along and within the corridors).

3.19.1 Sensitive Species

Plants at the Project Site were evaluated for sensitivity to disturbance based on state and federal agency listings, guidelines and regulations. Species may be categorized as special status or highly safeguarded.

Special status species include federally listed and proposed species, federal candidate species, state-listed threatened species, and sensitive species (BLM, 1993). Seventeen plant special status species

may occur within the overall Kingman Resource Area, but none are known or suspected to be present at the Project Site BLM Sensitive species that may occur within the project area include the golden eagle, Allen's big-eared bat, cave myotis, and Townsend's big-eared bat.

Threatened and Endangered Plant Species are listed by the U.S. Fish and Wildlife Service – Arizona Ecological Services. No threatened or endangered plant species were observed at the Project Site.

The Arizona Department of Agriculture Arizona Native Plant Law list of "Highly Safeguarded Protected Native Plants" (AZDA, 2013) categorizes a wide range of plant species within four categories: Highly Safeguarded, Salvage Restricted, Salvage Assessed and Harvest Restricted. Those plants listed as Highly Safeguarded are threatened for survival or are in danger of extinction. Plants listed as Salvage Restricted are those plants for which collection can only occur by permit. Plants listed as Salvage Assessed have enough value if salvaged to support the cost of salvaging. Plants listed as Harvest Restricted are protected due to the fact that they are subject to excessive harvesting because of their intrinsic value of products made with their wood or fiber.

Plants in these categories require an Arizona Department of Agriculture permit to remove or harvest. Of the four categories, only Highly Safeguarded is considered by the Arizona Department of Agriculture to be threatened for survival or in danger of extinction. However, no plants listed as Highly Safeguarded (as defined by the Arizona Department of Agriculture) were observed in the Project area, with the possible exception of two *Echinocereus sp.*, as noted below.

Table 2 presents those plant species identified in the Project area that are protected under the Arizona Native Plant Law.

TABLE 2 - PLANTS OBSERVED WITHIN THE PROJECT AREA THAT ARE PROTECTED UNDER THE ARIZONA NATIVE PLANT LAW

SPECIES	CATEGORY OF PROTECTION [1, 2]
HEDGEHOG CACTUS (*ECHINOCEREUS SP.*)	Salvage Restricted or Highly Safeguarded[3]
WHIPPLE AND BUCKHORN CHOLLA (*CYLINDROPUNTIA SP.*)	Salvage Restricted
SPANISH BAYONET YUCCA (*YUCCA SP.*)	Salvage Restricted
CRUCIFIXION THORN (*CASTELA SP.*)	Salvage Restricted
PRICKLY PEAR (*OPUNTIA SP.*)	Salvage Restricted

Notes:

1. Highly Safeguarded – No collection allowed
2. Salvage Restricted – Collection only with permit
3. Two cacti of the *Echinocereus* genus were identified in the utility corridors. Observation in the field suggests that these are *Echinocereus engelmannii* (Engelmann's Hedgehog) which is a common species to this area. However, until the cacti are observed in bloom, it will be impossible to rule out *Echinocereus triglochidiatus* which is listed by the Arizona Department of Agriculture as "Highly Safeguarded".

3.20 Wildlife

During a two-day field survey (April 23-24, 2012) and two one-day follow-up visits (June 5 and July 16, 2012), a pedestrian survey was performed covering all of the proposed mine and mill activity areas, as well as along site perimeters and proposed power line corridors. Little wildlife was observed at the

Project Site, mainly because no native habitat remains at the Mine Site due to the extensive surface disturbance from prior mining activities. Other than a few small animals (mostly lizards and rodents such as ground squirrels and cotton-tail rabbits) and a limited number of flighted or ground-dwelling avian species (sparrows, a few song-birds, ravens, two covey of Gambel's quail, a pair of red-tail hawks who seasonally nest along the deep-pit walls, and an occasional turkey vulture soaring overhead) no resident wildlife was noted on or within the proposed site boundaries. Three western diamond-back rattlesnakes and a small herd (five to six) of wild horses were sighted several miles outside the Project Site; a number of quail and dove flocks were flushed and observed along the perimeter outside the Mine Site boundaries.

During the January 2013 utility corridor survey, only cotton-tail rabbits (*Sylvilagus sp.*), jackrabbits (*Lepus sp.*), and various sparrow species (*Emberizidae sp.*) were encountered.

3.21 Wild Horses/Burros

Two BLM-designated wild horse and burro areas lie within 20 miles of the Project Site. These are the Cerbat Herd Area and the Black Mountain Herd Management Area. A herd area is "the geographic area identified as having been used by a herd (wild and free-roaming horses or burros) as its habitat in 1971" (BLM, 1995). A herd management area is "a herd area (or any portion) identified for maintenance and management of wild horses or burros through decisions resulting from the land use planning process, including public involvement" (BLM, 1995).

The Cerbat Herd Area is centered on the Cerbat Mountain Range north of Kingman and contains 83,000 acres of Arizona interior chaparral grassland and Grand Canyon desert shrub (BLM, 2011). The Cerbat Herd Area is roughly 20 miles long and 16 miles wide, and is one of only two herd areas in Arizona which are home to wild horses. Approximately 60 wild horses currently roam the Cerbat Herd Area (BLM, 2011). The population is relatively stable and no wild burros are known to occupy the Cerbat Herd Area. During a visit to the Project Site, a small herd consisting of one stallion and four to five mares was observed in an arroyo several miles north of the Project Site, but no direct evidence of the herd's regular presence on or use of the Project Site was found (e.g., no droppings, forage areas, etc.).

3.22 Wilderness Concerns

The Project area is not located within any designated wilderness area. The closest designated wilderness area, Mount Tipton Wilderness, is located just north of Big Wash Road, approximately 5 miles north of the Mine Site.

4.0 Environmental Impacts

4.1 Introduction

Section 4.0 discusses the environmental impacts that implementation of the Proposed Action or the No Action Alternatives may have on the existing environmental conditions at the Chloride Copper Mine Site. As discussed below, minimal environmental impacts to the natural and human environments are anticipated from the Proposed Action Alternative.

4.2 Air Quality

4.2.1 Proposed Action Alternative

The Project will implement engineering and physical controls to manage dust from the proposed construction and operation activities. Best Management Practices designs and proper implementation of engineering controls will provide the primary control mechanism for dust management. The physical controls will provide additional protection and ensure that dust is managed in accordance with regulatory requirements. The Best Management Practices to be employed for physical controls include the regular use of water trucks to spray dust-suppressing liquid (either clean process water or surplus water from the deep pit) on areas being actively mined, haul roads, and other potential sources of fugitive dust and covering tailings during mining operations to suppress dust. The crushing plant will utilize standard dust suppression measures and have an Arizona Department of Environmental Quality air quality permit in place. In addition, reclamation and re- vegetation will reduce dust emissions long-term.

Greenhouse gas emissions at the Mine Site are likely to be associated only with stationary diesel equipment. The primary greenhouse gases emitted by this equipment and haul trucks are carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4). There are no standards or limits for greenhouse gas emissions imposed by either the Federal or State of Arizona governments. In addition, Arizona is no longer part of the Western Climate Initiative, which imposed mandatory limits on greenhouse gas emissions from industry. Because of the small size of the project, no greenhouse gas emissions from Site operations are expected to be measurable at the Project boundary. Therefore, no mitigation is needed.

There is expected to be a potential temporary increase in asbestos fibers which affects air quality associated with one of the proposed reclamation activities at the Mine Site, namely the removal of a concrete asbestos pipeline connecting the northern supply wells to the Project operations area.

ADEQ's National Emission Standards for Hazardous Air Pollutants Program's Publication Number TM 12- 01 *Asbestos NESHAP Regulations for Renovation and Demolition Activities* will be employed during the removal of the concrete asbestos pipeline to minimize the potential for releases of asbestos fibers. The publication requires procedures (including air quality monitoring) to be employed to detect the presence of asbestos material and a description of work practices and engineering controls to be used, including asbestos removal and waste-handling emission control procedures (ADEQ, 2012). The Project will perform the asbestos removal in accordance with these procedures.

The Project will perform air quality Best Management Practices and dust suppression actions associated with mine or mill operations and the removal of the concrete asbestos pipeline connecting the Project to the northern supply wells.

The Proposed Action will result in some increase in dust and diesel air emissions during the construction of ROWs, active operations, and reclamation (including removal of the concrete

asbestos pipeline connecting the northern supply wells to the Project operations area). However, this will be followed by an improvement relative to current air quality as reclamation continues, including proper contouring and re-vegetation. The temporary increase in diesel emissions will cease when active operations is completed.

After reclamation, no residual air quality effects would remain at the Project Site. Air quality at the Project Site and surrounding area should become considerably improved as a result of site-stewardship activities including fugitive dust suppression at the location of the mill tailings where the current situation results in diminished air quality.

4.2.2 No Action Alternative

Under the No Action Alternative, the proposed Project would not be approved and the proposed mining activities would not commence. Air quality impacts associated with mining operations would not occur. In addition, there would be no reclamation under the No Action Alternative (in particular, the tailings and the concrete asbestos pipeline). In other words, no site stewardship activities would occur in the No Action Alternative. In comparison to the Proposed Action, overall air quality impacts would remain similar to the current status, and higher than under the Proposed Action.

4.3 Cultural Resources

4.3.1 Proposed Action Alternative

Proposed Actions at the Mine Site would occur within surface areas previously disturbed by mining activities, so there would be no additional disturbance to cultural or historical resources. No impacts to cultural or historic resources are expected because there are no known cultural or historical resources present on or immediately adjacent to the Project Site that would be adversely affected. However, if previously undocumented cultural resources are identified during ground-disturbing activities, mining activities in the immediate vicinity of the discovery will be restricted until the area can be evaluated by a professional archaeologist or cultural resources specialist to ensure that such cultural resources are handled in accordance with regulatory requirements.

A Class III cultural survey was performed along the water supply pipeline corridors (SWCA, 2013). No resources eligible for the National Register of Historic Places were identified within the corridors or at the water-well sites. Because UniSource Energy Services plans to access the power line corridors using existing dirt roads and arroyo bottoms, and to install new poles and conductors using light vehicles such as all-terrain vehicles, no effects on any potential cultural or historical resources are likely to occur as a result of the proposed power line construction and operational activities.

No impacts to cultural resources from the proposed action are anticipated because the proposed mining activities will take place within the footprint of previously disturbed mining activities and the field surveys did not identify any cultural resources within the corridors.

4.3.2 No Action Alternative

The No Action Alternative would not affect cultural resources.

4.4 Environmental Justice and Socioeconomics

4.4.1 Proposed Action Alternative

The Project will employ 30 to 40 staff during its operational life of three or more years, mostly coming from the local or regional labor force. Employment multiplier effects will create another 65 indirect jobs within Mohave County. Therefore, the Proposed Action will have an impact on the area by helping to reduce the county's high unemployment rate.

As mentioned in Section 3.4.1, , according to the 2010 US Census, Chloride had a population of 271 comprised primarily of non-hispanic /latino ethnicities (260). Hispanic-latino was the next highest number of individuals (11) followed by native Hawaiian and Pacific Islander (4) (U.S. Census Bureau, 2013). The median household income in Chloride in 2010 was $31,484 (Cubit, 2013), and the income (gross) poverty level for the US at that time for a household with four persons was $28,668 (USDA, 2013). Given these facts, and assuming similar conditions for 2013, the prospects of environmental justice issues related to impacts from the proposed operations on low income and/or minority populations are insignificant.

Between wages paid and local expenditures, the Project will impact the local and regional economy by adding an estimated $13,271,000 annually, with more than $333,600 anticipated to be paid in county and state taxes, providing an increase in the county property and sales tax-base. Any possible environmental justice effects on local or regional disadvantaged economic, racial, or ethnic populations would be beneficial as a result of increased employment opportunities afforded by the Project. No other impacts associated with environmental justice and socioeconomics are expected to occur.

4.4.2 No Action Alternative

The No Action Alternative would not affect Environmental Justice or Socioeconomics.

4.5 Hazardous Materials and Waste

4.5.1 Proposed Action Alternative

As part of the permitting effort, SIERRA will file for a hazardous waste identification number from the Environmental Protection Agency and register as a generator of hazardous waste with the Arizona Department of Environmental Quality. Proper management of wastes should allow the Project to have a status of Conditionally Exempt Small Quantity Generator of hazardous wastes. However, in the event that it becomes necessary to manage quantities of waste in excess of the Conditionally Exempt Small Quantity Generator threshold, SIERRA will comply with applicable requirements for proper management of waste on a larger scale. In addition, the operations will be managed to ensure that:

- Waste will be appropriately categorized, separated, packaged, labeled, stored on site, and inspected as required by the hazardous waste regulations.

- Materials planned for use on the Mine Site will be examined to determine if they have the potential to create hazardous waste and, if they do, non-hazardous substitutes will be sought.
- Operations will be examined on an on-going basis to evaluate whether hazardous substances are eliminated whenever possible.

Wastewater treatment sludge produced from electroplating operations is a listed hazardous waste (U.S. Environmental Protection Agency hazardous waste number F006 as described in 40 CFR 261.31). There are no standards or limits for production of sludge. The hazardous materials used during operations of the mine will be removed during the reclamation process at cessation of operations. Asbestos- containing materials (such as those from the removal of the northern pipeline (ROW AZA 740) and other hazardous wastes will be disposed of at a licensed hazardous waste facility or through an experienced hazardous waste disposal contractor. Hazardous waste discovered that is currently on site will be managed properly and removed during reclamation activities. The Proposed Action is anticipated to improve the environment due to the removal of the concrete-asbestos pipe and hazardous wastes that may be on site currently.

4.5.2 No Action Alternative

The No Action Alternative would have no Hazardous Materials effects unless the current state of the Mine Site includes uncontrolled hazardous materials with the potential to impact air, water, or livestock.

4.6 Human Health and Public Safety

4.6.1 Proposed Action Alternative

Road access to the existing mine/mill facilities is controlled by a simple bar-type gate that is easily circumvented, and there are no control or exclusionary devices (such as fences, berms, or barriers) to prevent pedestrian or vehicular access to the Mine Site. A number of warning signs are placed around the property, but accounts of human and animal trespass are common, at least anecdotally. Current (pre-Project) environmental and access conditions create potential liability as a result of the hazardous conditions and “attractive nuisances” present at the Mine Site.

All operations at the mine and mill site will be subject to and regularly inspected for compliance with Mining Safety and Health Administration and Occupational Safety and Health Administration rules and regulations, as well as controls and inspections by the Arizona State Mine Inspector Office. Because public access within portions of the Project Site where mining and milling activities are taking place will be strictly controlled (via exclusionary fencing and vehicular gates), there would be no new or additional hazards to the public, compared with the current situation (where public access occurs in spite of numerous “No Trespassing” and similar warning signs). In addition, new exclusionary fencing will be placed around potentially hazardous areas of the Mine Site (such as the open pit, copper-processing facilities, and heap-leach pad) that pose hazards to the public, grazing livestock, and wildlife. Thus, operations at the Project Site will improve safety conditions and remove or lessen potential hazards at the Project Site to the public, livestock, and wildlife.

During reclamation, the tailings will be covered to prevent fugitive dust. The open pit will be fenced to protect humans, livestock, and wildlife from entering and injury. The scrap metal and abandoned equipment will be removed from the Mine Site.

Best Management Practices will be used during reclamation and the removal of the concrete asbestos pipeline (discussed in ***Section 3.2***) to minimize the potential for adverse effects on human health and public safety.

No impacts to public safety or hazard-prevention would occur as a consequence of the proposed Project and its activities, and after reclamation, residual effects remaining at the Project Site include the fence surrounding the open pit and removal of the concrete asbestos pipeline.

4.6.2 No Action Alternative

The No Action Alternative would not alter the current effects on Human Health and Public Safety. There would be no improvement in protection of the public, livestock, and wildlife against current physical hazards at the Mine Site.

4.7 Invasive and Non-Native Species

4.7.1 Proposed Action Alternative

Development and operation of the Project may result in the introduction or expansion of invasive and non-native species to previously disturbed and undisturbed areas. Surveys for invasive and noxious weeds will be conducted twice yearly during the spring (March) and in the summer rainy season (late August). the wetter periods of the year (during operations). Reports will be issed by the proponent following the surveys, with a copy of the survey reports sent to BLM Authorized Officer. Observed invasive and noxious weeds will be removed by hoeing and disposal in disposable containers to prevent spread. During reclamation, the seed mix used in the re-seeding process will be developed to prevent invasive or noxious species from being included. The seed mix will be presented to and approved by BLM prior to use. As such, no impact is expected at the Mine Site.

4.7.2 No Action Alternative

The No Action Alternative would not affect the spread of invasive and noxious weeds.

4.8 Land Use

4.8.1 Proposed Action Alternative

The Proposed Action conforms to land use plans, allowable uses, and restrictions of the BLM's Kingman Area Resource Management Plan, the Mohave County General and Land Use Plans, and the State of Arizona's regulatory framework. Impacts to land use will occur as a result of the construction of new ROWs including the addition of pipelines and widening of the access road. After reclamation, all mining operations areas will be reclaimed and reopened for recreational use with the exception of the open pit, which will remain fenced for human, wildlife, and livestock safety.

Therefore, with the exception of the open pit, no permanent environmental consequences or impacts are likely to occur to existing or allowable land uses in the area as a result of adopting the Proposed Action.

Ranchers having grazing rights may be able to have access to fenced areas as appropriate by having an extra lock on the chain locking the gate or an extra key to the lock on the gate.

4.8.2 No Action Alternative

The No Action Alternative would not affect Land Use.

4.9 Minerals

4.9.1 Proposed Action Alternative

Operation of the Chloride Copper Mine and mill will involve considerable movement of existing ore stockpiles, the upper pit, the existing heap leach pad, and the old mill tailings. Movement of overburden will be limited. No new surface disturbance would occur on previously undisturbed land. Operation of the proposed mine will result in the removal of copper minerals leaving the Mine Site with reduced concentrations of copper in the ground. This would result in reduced mineral contaminants of the area. Overburden from mining activities will be used to reclaim the surface area disturbed from mining. Copper oxide ore has only minimal traces of sulfides. These sulfides are in such small concentration that the mining and processing of copper oxide ore poses no issues of acid mine waters.

4.9.2 No Action Alternative

The No Action Alternative would result in economic minerals not being removed from the Project Site; however, this Alternative would also result in no reclamation activities being performed.

4.10 Water Quality and Quantity

4.10.1 Proposed Action Alternative

No natural surface water sources or watercourses exist within the Project Site. Therefore, the Proposed Action would have no effect on surface water. Runoff following precipitation events will be governed by a Storm Water Pollution Prevention Plan prepared in accordance with the Arizona Multi-Sector General Permit for mining operations issued by the Arizona Department of Environmental Quality, as described in the MPO. Runoff from precipitation will be contained within the Project Area. Ponding of water (from rainfall and seeps) would continue within the bottom of the open pit, though some of this water might be removed for use as a dust-suppressing agent elsewhere on the Mine Site, which would improve overall environmental conditions.

Mining operations are expected to obtain water from two existing wells from which SIERRA has rights to withdraw groundwater and two additional wells for which SIERRA has made application for their use under an amendment to Right-of-Way AZA 740 as discussed in Section 2.1.2 In the event that these wells cannot supply the required water, then water may be obtained from other sources. The first of these additional sources is the lower open pit which is located on-site. It is unclear at this

point how much water the pit is capable of producing due to the lack of reliable pump test data. The second additional source is other wells on site that have water, but have not been thoroughly tested. The third additional source of water is from the pipeline that supplies water to the town of Chloride from the Valley Pioneer Water Company. The water to the town of Chloride is supplied by a pipeline that runs along Old Boulder Dam Highway within one mile of the Mine Site (New Waterline E; map 2-1). In the event that other water sources fail, the water may be purchased from the Valley Pioneer Water Company If this becomes the case, then an amendment to the existing Town of Chloride ROW would be required.

The wells that are potentially available for use at the site are estimated to be capable of producing water at a rate of 36 to 75 gallons per minute (gpm) and would most probably produce around 55 gpm (Rizzo, 2012). This pumpage rate would be more than adequate to provide the 50 gpm estimated as necessary to sustain operations.

Mining operations are expected to use approximately 96 acre-feet (about 50 gpm) of groundwater per year. Preliminary computations indicate that the impact of this expected water use will be small. Specifically, groundwater models suggest a water table drawdown of just over 0.5 feet within 200 to 300 ft of the proposed water supply wells for the Mine Site, and a drawdown of less than 0.2 ft at distances near 2,000 to 2,500 ft after one year (PCR, 2012). After three and four years of pumping (expected life of mine), the expected drawdown would be approximately 0.27 ft. and 0.28 ft. at a distance of 2,000 to 2,500 ft., using the same theis analysis and assumptions used for the one-year analysis. . Only 7 wells located outside of the mine property or SIERRA's mineral claims may be impacted by this drawdown. However, because the drawdown is so small (less than 0.3 ft), it is anticipated that these wells will not be affected by the Proposed Action. Future residential development is anticipated to be of sufficient distance from the Mine Site so as not to be impacted by Project water use. The calculated cone of depression from groundwater withdrawal is also not expected to affect the springs in the immediate vicinity of the Project. The closest spring, Emerald Isle Spring, is located east of the Mine Site upgradient from the wells and approximately 5,000 ft from the nearest well.

Because all heap leaching and processing operations at the Mine Site will be contained by underlying geo-synthetic liners (in accordance with an Aquifer Protection Permit to be issued by the state), no leachate or processed fluids are expected to enter the groundwater system underlying the Project Site. A leak detection system will be installed beneath the process pond liners. Prior to installing the new heap leach pad and pond liners, the area will be examined to determine whether past mining and ore processing activities have resulted in contamination of soils. All processing facilities will be regularly monitored for leaks and infiltration into the groundwater aquifer and for potential degradation of local or regional groundwater quality using the existing network of groundwater monitoring wells.

In addition, the Aquifer Protecton Permit will mandate a groundwater monitoring program that will be established prior to mining activities to create a water quality base line for future groundwater monitoring. The permit will also contain provisions for establishing water quality objectives for monitoring and protecting water quality downgradient of the site.

Historical operations at the Mine Site are generally similar to that which is expected as part of the current Proposed Project. As shown in the following discussion, historical monitoring well data suggest that groundwater quality is not degraded as a result of mining operations. It is anticipated that groundwater quality will likewise not be degraded as a result of planned operations of the Chloride Copper Mine. Because activities at the Project Site were previously permitted under the Arizona Department of Environmental Quality's Aquifer Protection Permit Program (Permit No. P-101846), there are data from four point-of-compliance monitoring wells at the Mine Site. Water quality was monitored in these wells during two periods; from 1994 through 1997 and from 2004 through 2007. All monitoring data for the Mine Site are provided as an appendix to the amended application for the transfer of the Aquifer Protection Permit to SIERRA. The Aquifer Protection Permit application is now on file with the Arizona Department of Environmental Quality. The following discussion reviews the analytical results for the 2004 through 2007 monitoring period, as reported in the Aquifer Protection Permit transfer application.

During the 2004 to 2007 monitoring period, consistent exceedances of the ambient water quality standards for arsenic were noted in the point-of-compliance wells located down-gradient of the mine. Concentrations ranged from 0.079 to 0.096 mg/L, with an average of 0.087 mg/L compared to the U.S. Environmental Protection Agency ambient water quality standard for arsenic of 0.05 mg/L. Exceedences were also recorded in several down-gradient wells for chromium and nickel. In the case of chromium, concentrations range from 0.33 to 1.7 mg/L, with an average concentration of 0.77 mg/L, compared to the ambient water quality standard of 0.1 mg/L.

During the earlier monitoring period at the Mine Site (1994 to 1997), groundwater quality measurements in an up-gradient (background or baseline) well indicated high sulfate concentrations, in excess of levels reported in down-gradient wells. Moreover, specific conductivity was noted as being above the values reported in the down- gradient monitor wells. This relationship (i.e., analyte levels in H-1 equal to or higher than down- gradient wells) is generally observed for the Project, suggesting that the operation is not degrading groundwater quality.

Some impacts to water quality or quantity would occur as a consequence of the proposed Project and its activities. However, following conclusion of mining activity and after reclamation, little residual effects would remain at the Project Site. Impacts to ground water quantity and downstream users would diminish with time following mining as the groundwater table recovers due to cessation of pumping.

4.10.2 No Action Alternative

The No Action Alternative would result in no impacts on groundwater quality at the Mine Site. However, it is anticipated that the No Action Alternative (i.e., no site reclamation) could result in a deterioration of water quality at the Mine Site due to pre-existing conditions.

4.11 Migratory Birds

4.11.1 Proposed Action Alternative

Uncovered pregnant leach solution, intermediate leach solution, and raffinate ponds and/or ponded water in non-stormwater retention basins associated with the Proposed Action could serve as

possible attractants to migratory birds, most notably waterfowl, although no observations of waterfowl have been made at the Mine Site. Accordingly, the acidic solution to be contained within the ponds represents a potential threat to birds protected by the Migratory Bird Treaty Act (or otherwise of concern). Ingestion of the water in the ponds by migratory birds including the golden eagle may result in the poisoning and death of these birds.SIERRA will therefore monitor all ponds at the Mine Site for use by migratory birds (and other wildlife). Pond monitoring reports will be submitted to the BLM Authorized Office twice per year. Appropriate mitigation measures such as netting or floating ball covers will be utilized to reduce access to open water at the Mine Site. However, given the general lack of open water (wetlands, agricultural ponds, etc.) in the wider Project area, migratory bird activity at the Mine Site, namely pond stopover and possible contact with acidified waters, is not anticipated.

Because SIERRA is not proposing to mine (or disturb) areas of the open pit at the Mine Site, disturbance of the red-tailed hawk nesting sites (or nesting activities) on the Property is not expected. Moreover, raven nests identified near the existing mill facilities (also protected under the Migratory Bird Treaty Act) are not expected to be impacted by the Proposed Action, as the existing mill facilities will be left in place during the proposed operations. Moreover, it is likely that the nesting ravens are already habituated to noise and ongoing human activities through the current human activities. Nest abandonment or displacement of birds is therefore not expected.

SIERRA will install perch discouragers (or other design features) on all new power lines at the Mine Site in an effort to limit potential risk of electrocution to migratory (or other) birds of concern.

After reclamation, no residual effects (e.g., acidic ponds) would remain at the Project Site. However, the protective/mitigation measures described above will be implemented to ensure that no such impacts will occur. After reclamation, no residual effects (e.g., acidic ponds) would remain at the Project Site.

4.11.2 No Action Alternative

The No Action Alternative (i.e., no construction or refurbishment of pregnant leach solution, intermediate leach solution, or raffinate ponds) would generally not impact migratory bird populations. However, the No Action Alternative would leave the existing pregnant leach solution and raffinate ponds in place and untreated, thereby posing a possible threat to migratory birds if the ponded water is determined to be highly acidic or contaminated with excessive metal concentrations.

4.12 Native American Religious Concerns

4.12.1 Proposed Action Alternative

No Native American concerns or issues regarding the proposed Project have been expressed, either at a widely-publicized community meeting held June 6, 2012, in the town of Chloride or from consultation with the Hualapai Tribe initiated by BLM KFO in May 2012.

Impacts to traditional cultural properties are not anticipated as a result of the proposed project and its related activities. The operations will occur within previously disturbed mining areas.

4.12.2 No Action Alternative

The No Action Alternative would not impact Native American Religious Concerns.

4.13 Paleontological Resources

4.13.1 Proposed Action Alternative

Based on the observed geology present in the Project area, the development and operation of the Project would not impact paleontological resources. If paleontological resources are discovered during ground-disturbing activities, the work in the immediate vicinity will be halted until a qualified paleontologist can evaluate the find.

4.13.2 No Action Alternative

No paleontological resources would be impacted by the No Action Alternative.

4.14 Recreation

4.14.1 Proposed Action Alternative

The Proposed Action Alternative would limit recreational usage of restricted access (fenced) areas (approximately 139 acres). Recreational users will see a difference in their ability to access the Mine Site, during operations having less access to Mine Site property. After Mine Site closure, recreational users will have greater and safer access because certain areas will be reclaimed and made available for open use while the open pit will remain fenced for the protection of humans, wildlife, and livestock (approximately 11 acres will remain fenced).

Fencing will improve safety conditions in the operational area by limiting access by humans, livestock and wild animals. While the access road to the operational area will be restricted to the public, other dirt roads adjacent to the Project Site that provide access to the foothills and Cerbat Mountains east of the Mine Site will remain open to the public.

Because previous mine and mill activities created inherent safety hazards to recreational uses, the proposed Project boundaries will limit access for future public uses at the Mine Site, and exclusionary fencing and vehicle-exclusion berms will be placed around areas of potentially high hazard (i.e., the existing deep pit, ore processing ponds, and mill equipment). Covering the mill tailings during mining operations to suppress fugitive dust created by wind and off-road vehicles traveling across the mill tailings will be an improvement of air quality for the downwind communities and home sites.

4.14.2 No Action Alternative

The No Action Alternative would not affect Recreation nor reduce the potential for accidents due to past mining operations.

4.15 Soils

4.15.1 Proposed Action Alternative

Development and operation of the Project will result in the re-disturbance of approximately 160 acres of public land, including 99 acres for the mining and operational area and 61 acres for the tailings. For the pipelines and access road, the total disturbance is approximately 19 acres. Approximately 11 acres of the proposed Project area consist of new disturbance.

The current condition of the Mine Site is of disturbed soils, roads, stockpiles, mill tailings, processing facilities and an open pit remaining from previous mining activity.

As a part of the reclamation process, at the end of project activities, all processing facilities except for the concrete foundation pads will be removed, the disturbed areas of the Mine Site will be ripped and re-graded, the soils amended if required, and the disturbed areas re-seeded with a mix of vegetation native to the area. A discussion of the seed mix to be used in the re-seeding process can be found in ***Section 3.7***.

The Proposed Action will result in an impact to soil quality at the end of mining operations and reclamation activities.

4.15.2 No Action Alternative

The No Action Alternative would not result in new disturbance; however, the existing roads, heap leach pad, processing facilities, mill tailings pile and low-grade ore stockpiles would remain in place.

4.16 Threatened and Endangered Species

4.16.1 Proposed Action Alternative

Direct impacts on vegetation and wildlife species (threatened, endangered, or otherwise) could result from construction and operations (hauling, etc.) at the Project Site. These impacts could include loss or disturbance of plants and animals or critical habitat, or disruption of nesting and/or mating behaviors. However, Proposed Actions associated with the Project have been designed to mitigate or minimize any potential impacts (see ***Section 2.0***). For example, utility corridors to be established at the Mine Site will be installed adjacent to existing roads or existing pipeline corridors in an effort to reduce disturbance and fragmentation of plant and animal habitat and populations, and no new access roads will be constructed. Potential widening of existing access roads (see Appendix C of the MPO) would result in a temporary loss of habitat only. Resource protection measures such as reduced vehicle speeds on Site access roads would also be employed. More importantly, most disturbed areas at the Mine Site will be reclaimed and re-seeded according to BLM regulations and permit guidelines, thereby improving overall plant and animal habitat quality.

Based on the mitigation measures described below, it is anticipated that the Proposed Action will have no impact on threatened or endangered plant and animal species. Nonetheless, SIERRA will implement routine biological monitoring during Site operations (see ***Section 4.7.1***) in part to verify that no threatened or endangered species have started to utilize the Project Property.

Measures will be implemented to minimize the access of Wildlife and Wild Horse & Burros to the solution ponds. These measures will include:

- An eight-ft high chain-link fence topped by three strands of barbed wire will be installed around the entire perimeter of the solution ponds. The fence will be inspected daily and repaired, as necessary, to prevent access to the area by wildlife.
- Woven bird netting will be installed over the solution ponds.
- Mill personnel will inspect the solution ponds on a daily basis. As part of their inspection, they will identify and record any wildlife mortalities and, where possible, will implement measures to reduce or eliminate future occurrences. Pond monitoring reports will be submitted to the BLM Authorized Office twice per year.

With respect to California Condors specifically, new power transmission lines at the Mine Site could pose an electrocution hazard, but this would not be a new hazard as transmission lines already exist in the larger Project area. However, given that there is no evidence of condor use of the Project area, no impacts to the California Condor are anticipated.

4.16.2 No Action Alternative

The No Action Alternative would not affect threatened or endangered species.

4.17 Travel Management

4.17.1 Proposed Action Alternative

During Project operations, additional vehicular traffic will be expected. This will consist of approximately 20 to 30 employee vehicle trips per day, as well as one large acid-truck and one 18-wheel flat-bed truck exporting the copper cathode product each day. Although this additional traffic would constitute nearly a 50 percent increase in overall traffic at the Mine Site access point along the Old Boulder Dam Highway (County Road 125), this level of use is orders of magnitude below the safe level for vehicle carrying- capacity of existing access routes to the Mine Site. Old Boulder Dam Highway, according to the Mohave County Engineering Department, currently serves approximately 62 vehicles per day.

The Proposed Action will have an impact on traffic along Old Boulder Dam Highway and Mineral Park Road. However, due to the carrying capacity of the two roads, the increased traffic flow will be absorbed without effect on the roads.

There will be no effects on access to the Emerald Isle Well (the livestock well) from fencing at the mine. The rancher will have access to the Emerald Isle Well (the livestock well) and be able to pass freely through the gates; however, access to the Emerald Isle Spring Well is typically along an jeep trail south of the mine site. This road will not be gated; however, the rancher may have access as appropriate by being provided a key to the gate locks where the mine access road is fenced.

4.17.2 No Action Alternative

The No Action Alternative would not affect Travel Management.

4.18 Visual Resource Management

4.18.1 Proposed Action Alternative

There would be an impact to visual character of the facilities at the Project Site as a result of the increase in height of the heap leach pad from 20 ft to 80 ft. However, after mining is completed, the heap leach pad will be flushed to remove copper and sulfuric acid, and then contoured, covered, and re- seeded during reclamation. Additionally, the two 30-ft red water tanks will be removed during reclamation, for an improvement in the visual character of the Mine Site.

4.18.2 No Action Alternative

The No Action Alternative would not affect Visual Resource Management. The red tanks which are a dramatic aspect of the current viewscape would remain in place.

4.19 Vegetation

4.19.1 Proposed Action Alternative

Because nearly all the surface area proposed for mining and milling operations at the Project Site was disturbed by previous activities, no native vegetation or habitat remains at the Mine Site. Very little undisturbed areas occur along the Project's proposed utility corridors and access road. Biological surveys have been conducted to assess the potential impacts to vegetation along these corridors and access road. SIERRA has proposed a reclamation plan (Section 8.0 of the MPO) which would restore much of the Project area to near-native conditions; therefore, vegetative conditions would be substantially improved as a result of approval of the Proposed Action. During reclamation, the areas disturbed from mining activities at the Mine Site will be re-seeded with a mix of naturally occurring seeds. The mixture will be approved by BLM prior to implementation at the Mine Site.

No sensitive plant species or protected resources were identified within the utility corridors or at the Mine Site. As such, no impact is expected. However, two cacti of the *Echinocereus* genus were identified in the waterline corridors that appear to be *E. engelmannii* (Engelmann's Hedgehog), a species common to this area. However, until the cacti are observed in bloom, it will be impossible to rule out *E. triglochidiatus* which is listed by the Arizona Department of Agriculture as "Highly Safeguarded". These cacti will be re-examined and classified when in bloom during late spring 2013. No new roads or access routes will be constructed in installing the new power lines. For the construction of Unisource Energy Service's proposed powerline for the northern wells access to 12 pole structures would be up to 40 feet from existing roads and navigable washes. For the installation of five pole structures an aggregate of approximately 750 feet of cross country vehicle travel would be necessary. After construction vehicle tracks outside of existing roads and washes would be raked out and therefore the estimated 0.25 acres of disturbance would be temporary. These structures would be accessed by vehicles infrequently for maintenance, after which tracks would be raked out.

The extension of the UniSource Energy Services 69 kV power line on the Mine Site will require the relocation of power poles to avoid interference with renewed mining operations. All pole locations are within the disturbed area of past mining activities. Installation of the new power line poles will not impact vegetation as most of the area where the poles will be located has little to no vegetation.

The proposed action will result in a short term impact to the vegetation while mining and reclamation occur. No long term impacts to vegetation would occur as a consequence of the proposed Project and its related activities, and after reclamation, no residual effects would remain at the Project Site. Native habitat should be substantially improved over portions of the Mine Site as a result of the Project.

4.19.2 No Action Alternative

No impacts to vegetation would occur under the No Action Alternative.

4.20 Wildlife

4.20.1 Proposed Action Alternative

Based on Mine Site and utility corridor surveys conducted on lands adjacent to the Mine Site, wildlife activity surrounding the Project Site is expected to be minimal. Accordingly, the impact of the Proposed Action is likely to be minimal.

With the addition of exclusionary fencing around the deep pit, ore processing areas, solution ponds, and mill operations, conditions for grazing animals should improve because of the reduced hazard level at the Mine Site. In addition, after reclamation, the Mine Site, with the exception of the open pit, will provide additional habitat for wildlife. Because UniSource Energy Services plans to access the power line corridor using existing dirt roads and barren arroyo bottoms and to install new poles and conductors using light vehicles such as all-terrain vehicles, short-term disturbances to wildlife resources are likely to occur as a result of the proposed power line construction and operational activities.

No impacts to wildlife are expected as a consequence of the proposed Project and its related activities, and after reclamation, no residual effects would remain at the Project Site.

4.20.2 No Action Alternative

If the Project does not resume operations, there would be no change in the natural environment. No reclamation of the Mine Site area would occur and no habitat improvement would be expected.

4.21 Wild Horses/Burros

4.21.1 Proposed Action Alternative

No wild horses or burros have been seen on the Mine Site, nor was any evidence of a herd's regular presence on or use of the Project Site found. In addition, no burros are known to occupy the area in the vicinity of the Project Site. The small herd (four to six animals) of wild horses which were

observed to graze in the vicinity of the Project Site (though not within the proposed Mine Site operational areas) would not be affected by the proposed Project. With the addition of exclusionary fencing around the open pit, ore processing areas, and mill operations, conditions for the wild horses and grazing livestock should improve because of the reduced hazard level at the Mine Site. Available grazing areas are far in excess of the small portion to be restricted by fencing.

4.21.2 No Action Alternative

The No Action Alternative will not impact the wild horse or burro population.

4.22 Wilderness Concerns

4.22.1 Proposed Action Alternative

Because the Project is not located within or close to any designated wilderness area (the Mount Tipton Wilderness Area is at least 5 miles north of the Project Site), the Project will not impact any wilderness area.

4.22.2 No Action Alternative

There would be no change relative to wilderness concerns under the No Action Alternative.

4.23 Cumulative Impacts

The Council on Environmental Quality has developed regulations for implementing provisions under the National Environmental Policy Act. These regulations define cumulative effects as "…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions" (40 CFR 1508.7). The purpose of this section of the environmental assessment is to review the proposal for the Chloride Mine project in the context of past, present, and potential future actions that could impact the environment surrounding the project in a cumulative fashion for those impacts that are anticipated to result from the project.

For this analysis, only those environmental resources found to be impacted by the Project in ***Sections 4-2 through 4.22*** are discussed. The radial extent for the cumulative assessment area for the Proposed Action varies depending on which environmental resource is being examined. The time frame of these effects is 5-10 years which includes the anticipated three to four year life of the Project operations. A radial distance of 7.5 miles from the Project Site is shown on ***Figure 4-1***. Aerial imagery of the Project Site from 1998 and 2011 are shown on ***Figures 4-2 and 4-3***, respectively. ***Figures 4-2 and 4-3*** show the addition of many structures during the time period from 1998 until 2011.

The following sections discuss 1) a brief summary of the proposed action, 2) the affected environment and those aspects that are likely to be impacted, 3) the geographic area of potential impact, 4) past and present actions leading to the current condition, 5) impacts from the proposed action and its alternatives, 6) impacts due to reasonably foreseeable future actions, and 7) additive, synergistic, and countervailing impacts related to the interactions of the past, present, proposed, and other potential future actions.

4.23.1 Proposed Action

This proposal calls for reopening the Chloride Mine (previously known as the Emerald Isle Mine) to process copper ore from a previously disturbed mine pit and stockpiles. The ore will be processed through a newly constructed heap leach facility involving two process ponds and a solvent extraction/electrowinning plant that will be reconstructed. The current acres disturbed by past mining activities total approximately 160 acres. Approximately 11 acres will be newly disturbed for the construction of a pipeline to production wells to provide process water to the site.

The plan for the mine is to process approximately 1.4 million tons of copper ore over the period of three years of operation. It is estimated that this will result in over 12 million pounds of copper. When operations are completed, the site will be reclaimed in accordance with the Mining Plan of Operations that has been submitted to the BLM.

4.23.2 Affected Environment

Section 4.1 of this assessment presents a discussion of the anticipated environmental impacts from the proposed operations. The scope of this analysis of cumulative effects will be limited to the nature of those impacts identified in Section 4.1. Following is a summary of those impacts. Based on this summary of impacts, those impacts that have the potential for cumulative impacts when combined with the impacts of other past, present, and future activities in the vicinity include:

- **Air Quality**
  - An increase in particulates from loading , unloading, transporting product off-site, and crushing on-site.
  - Increased particulate levels due to car and truck traffic on unpaved roads.
  - Some emissions of Volitile Organic Compounds during operation from diesel fuel combustion and leaching and processing activities.
- **Hazardous Materials and Waste**
  - Between 100 and 1,000 kilograms (approximately 2,200 pounds) generated per month.
- **Environmental Justice and Socioeconomics**
  - Impact on local population and economy.
- **Invasive Species**
  - Potential to be brought on site from wind, birds, other wildlife, and vehicles.
- **Water Quality and Quantity**
  - Minimal impacts for surface water
  - No impact to groundwater quality
  - Minimal groundwater quantity impacts due to withdrawal to support mining and processing activities (on the order of < 3 feet)

- **Migratory Birds**
  - No impacts the golden eagle would occur due to mitigation measure provided
- **Threatened and Endangered Species**
  - No impacts sensitive bat species and the sensitive golden eagle due to mitigation measure provided
- **Recreation**
  - Limited to no access during mining operations.
- **Travel Management**
  - Increase by approximately 30 car and 7 truck trips per day.
- **Vegetation**
  - Re-disturbance of 150 previously disturbed acres.
  - Newly disturbed 11 acres
- **Wildlife (including Wild Horses and Burros)**
  - Minor transient and reversible impacts associated with mining activities and increase road traffic

The remainder of this cumulative assessment will consider only these impacts.

4.23.3 Geographic Scope of Effects

Most impacts associated with the proposed action are of limited geographic scope. Other impacts will go well beyond the proposed site into adjacent areas where there is potential to combine with impacts from other activities in a cumulative fashion. Most notable of these are impacts to Air Quality and Water Quality and Quantity.

For this cumulative analysis, a radius of 7.5 miles has been selected for the scope of impacts. This area encompasses both the air and water sheds where the greatest impact is likely to occur. The selected area spans from the Cerbat Mountains to the east of the proposed site to the Black Mountains across the Detrital Valley to the west. The area selected is indicated in Figure 4.2.

4.23.4 Past and Present Actions

Actions that have impacted the area of interest in the past include mining, infrastructure development, and residential and commercial growth. Expressions of past activities are provided in Figures 4-2 (1998) and 4-3 (2011). These Figures show the growth of nearby communities (residential and commercial) relative to the proposed project location, as discussed further below.

Small mines in the larger Project area began mineral extractions in the mid-1800s, and continued operations intermittently into the middle of this century (Rosner, 1998). Mining activity (namely copper production) increased markedly in the early 1940s and 1950s, with expanded operations at

the Project Site (then the Emerald Isle Mine). Operations at the Project Site continued sporadically into the 1990s. However, a peak in mining in the Project vicinity was reached in 1961, when the Duval Corporation began copper and molybdenum extraction and concentration operations in the Mineral Park area, located 3 miles east of the Project Site.

Today, the Mineral Park copper and molybdenum operation (now owned by Mercator Minerals, Inc.) is the only active facility in the Project vicinity. Nonetheless, numerous tailings and waste rock dumps from past actions remain throughout the Project area, and these remnants represent a possible source of heavy metal contamination for streambed sediments, surface soils, and groundwater (Rosner, 1998). Moreover, these existing mine wastes have likely contributed to degradation of air quality in the greater project area.

Highway and road construction has also occurred (with concomitant environmental impacts) in conjunction with regional residential and commercial development. The majority of Sacramento Valley roadways were platted before 1965, prior to Mohave County's subdivision and roadway design review process (CSVAP, 2008). An expansion of State Route 93 was accomplished within the last few years resulting in a four-lane highway between Kingman and the Boulder Dam. Most likely, these road improvements have resulted in greater safety for travelers on the road and not necessarily any marked increase in traffic volume.

In 1990, the City of Kingman had a population of 13,208, which rose to 20,069 by 2000 (Kingman, 2003). In addition, the Golden Valley Census Designated Place experienced a historical annual population growth rate of approximately five percent (GVAP, 2002). The Golden Valley Census Designated Place had a population of 4,515 in 2000 (USCB, 2000b) and 8,370 in 2010 (USCB, 2013e). This increase in population size can also be inferred from review of the increased development as shown on ***Figures 4-2 and 4-3***. Approximately 12,000 people are expected to be living in the Golden Valley Census Designated Place by 2020 (GVAP, 2002). Beginning in the 1990s and continuing through the 2000s, there was a large increase in residential and commercial development. This was in part due to City improvement districts in older, partially developed subdivisions (Kingman, 2003). In conjunction with the residential development, a number of shopping plazas were developed and the hospital underwent an expansion (Kingman, 2003). Commercial development in Kingman increased between 1992 and 2003 to keep pace with the population growth. This trend in development has continued to the present.

The nearby town of Chloride Arizona had a population of 271 in the 2010 census. The median age of the population was 63.8 years (www.zip-codes.com). In 2010 Chloride had 245 total housing units, 164 of which were occupied. Of the occupied units, 125 were owner occupied and 39 were renter occupied. Fifteen of the units were for rent, and 8 were for sale.

As mentioned, there have likely been past impacts to surface and groundwater from the numerous mining-related activities along the western flank of the Cerbat Mountains. USGS topographic maps of the area indicate no less than 15 mapped and named mines within 5 miles of the subject project area. Very likely these impacts occur today, although likely to a lesser degree as surface disturbances become more naturally stabilized and any groundwater impacts (from a quantity perspective) have mitigated as a result of discontinued pumping.

Water quantity has been a persistent long-term environmental issue in the greater Project area. Between 1943 and 2006, for example, Sacramento Valley Basin water level declines as large as 55 ft have been observed in wells penetrating the basin-fill aquifer in the Kingman and Golden Valley areas (Anning et al., 2006). Today, the town of Chloride is supplied with drinking water from deep wells located in Golden Valley (sourced from the Valley Pioneer Water Company).

4.23.5 Proposed Action and Alternatives

To summarize previous sections of this assessment, the proposed action involves the reopening of the existing mine that was formerly known as the Emerald Isle Mine near Chloride, Arizona in Mohave County. Proposed actions include the mining and processing of existing ore from the upper reaches of the pit and from existing ore stockpiles on the site. Approximately 1,385,000 tons of ore will be processed by crushing and placing on a new leach pad, leaching, and processing the leachate using an existing processing facility (solvent extraction/electro winning). One new processing pond and one refurbished pond will also constitute part of the operation. The leach pad system, PLS pond, and raffinate pond will all be constructed in accordance with prescriptive best available demonstrated control technology (BADCT) as defined by the state of Arizona. The operating life of the project will be three or four years.

The proposed project will disturb approximately 11 acres in addition to the existing disturbed area of about 160 acres. The additional disturbance is planned for construction of two water lines and one powerline. All of the proposed new disturbance will be on BLM administered lands.

The following table summarizes the anticipated impacts for the proposed project compared to past and potential future actions.

Table 3. CHLORIDE COPPER PROJECT IMPACTS

PROJECT DATA	(1998) Aerial View	(2014-2018) Proposed Operations	(2026) Reasonably Foreseeable Actions
Number of Employees on Mine Site	Non Operational	33 Persons Per 24 Hour Day	Non Operational
Acres of Mine Surface Disturbance	160 acres	160 Acres	160 Acres
Acres of Pit Surface	16 Acres	16 Acres	16 Acres
Estimated No. of Truck Trips / Day	Non Operational	1 Copper Cathode Truck (One Way) Per Day	Non Operational
Gallons of Water Used Per Year	Non Operational	31 million Gallons Per Year	Non Operational
Tons of Rock Moved Per Day	Non Operational	<2,000 Tons Per Day	Non Operational
Tons of Hazmat Used Per	Non Operational	xxx Tons Per Day	Non Operational
Noise Emissions	Non Operational	63.7 dbs at nearest residence	Non Operational
Dailey PM-10 Emissions	Non Operational	20 t/yr*	Non Operational
SUMMATION	ZERO AFFECT	+SIXTEEN UNITS	ZERO AFFECT

*Based on 24/7 crusher operation per ADEQ spreadsheet

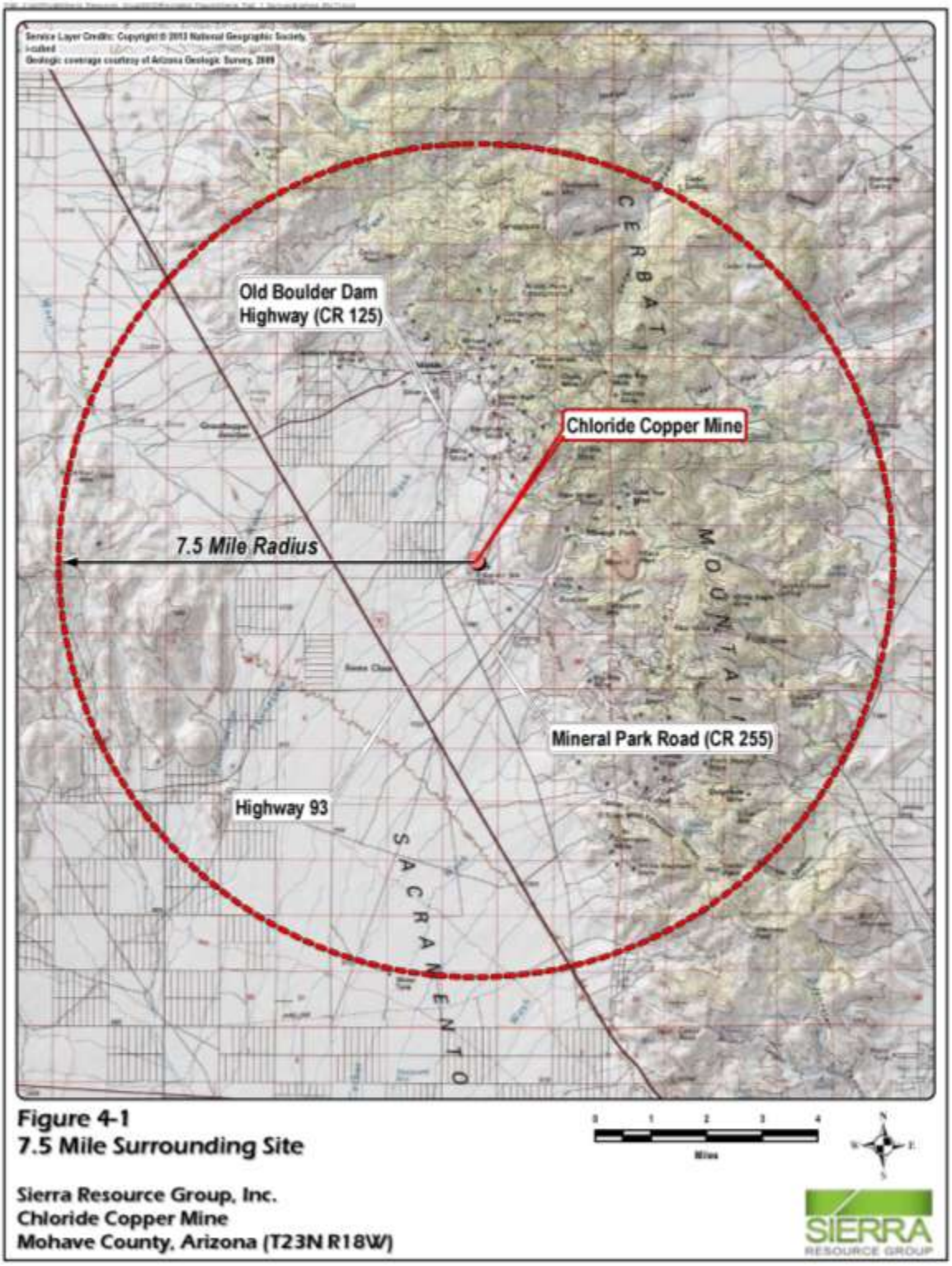
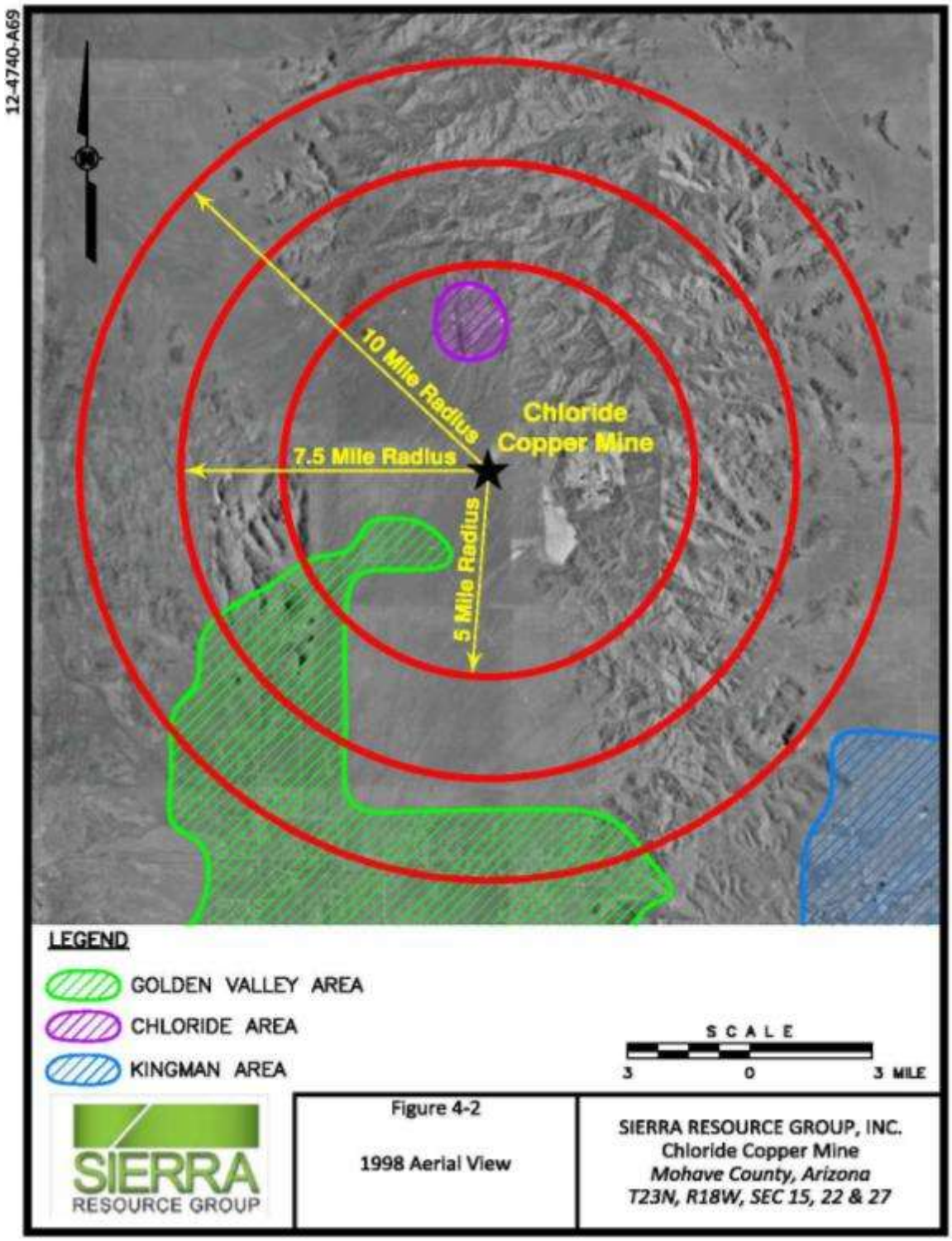
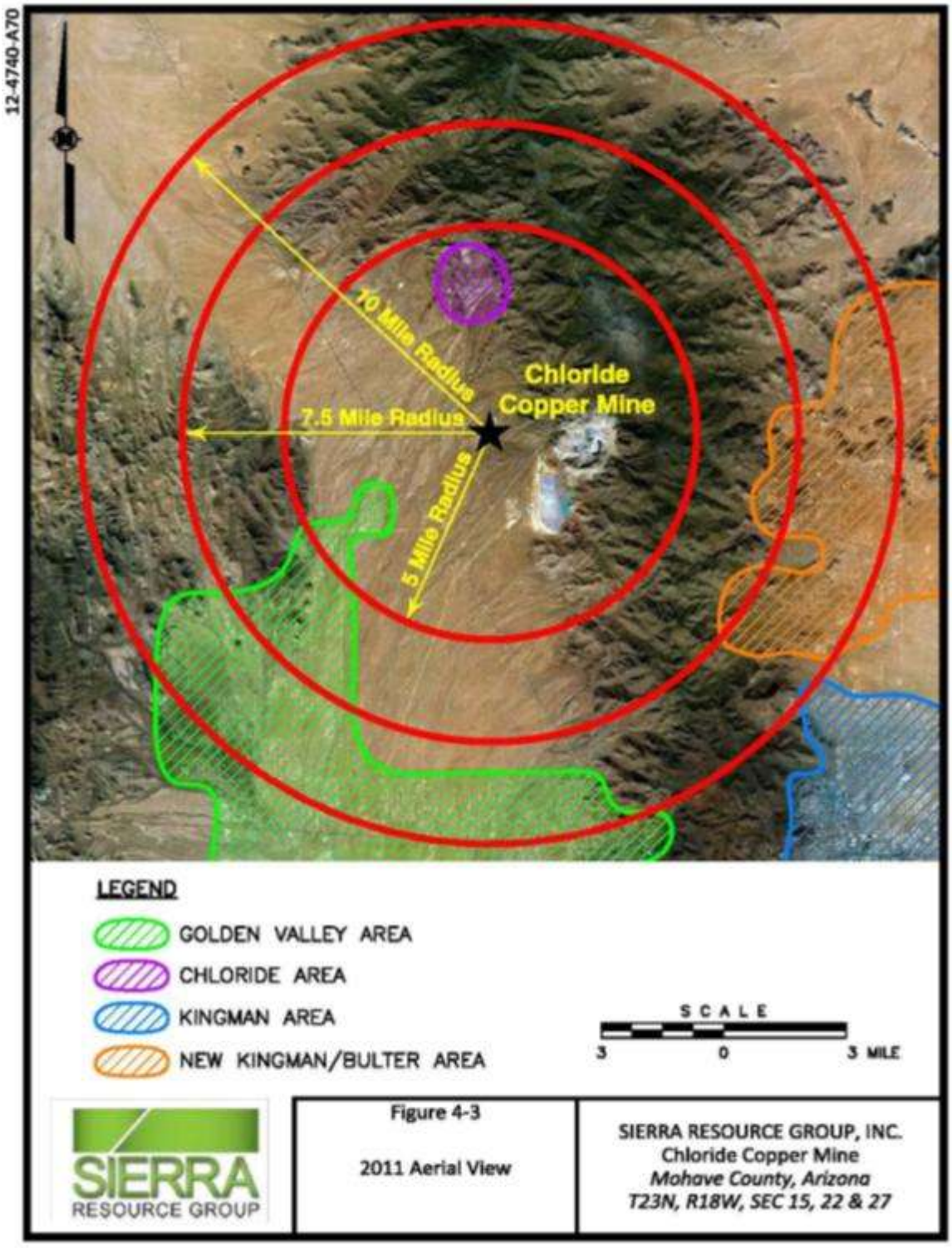


Figure 4-1
7.5 Mile Surrounding Site

Sierra Resource Group, Inc.
Chloride Copper Mine
Mohave County, Arizona (T23N R18W)


12-4740-A69
10 Mile Radius
7.5 Mile Radius
5 Mile Radius
Chloride
Copper Mine
LEGEND
GOLDEN VALLEY AREA
CHLORIDE AREA
KINGMAN AREA
SCALE
3
0
3 MILE
SIERRA
RESOURCE GROUP
Figure 4-2
1998 Aerial View
SIERRA RESOURCE GROUP, INC.
Chloride Copper Mine
Mohave County, Arizona
T23N, R18W, SEC 15, 22 & 27


12-4740-A70
10 Mile Radius
7.5 Mile Radius
5 Mile Radius
Chloride
Copper Mine
LEGEND
GOLDEN VALLEY AREA
CHLORIDE AREA
KINGMAN AREA
NEW KINGMAN/BULTER AREA
SCALE
3
0
3 MILE
SIERRA
RESOURCE GROUP
Figure 4-3
2011 Aerial View
SIERRA RESOURCE GROUP, INC.
Chloride Copper Mine
Mohave County, Arizona
T23N, R18W, SEC 15, 22 & 27

4.23.6 Reasonably Foreseeable Future Actions

As mentioned, the Kingman area is projected to continue to grow at least into the near future. The adjacent Golden Valley area is also projected to grow, likely at a similar rate. At the rate of approximately 1% growth per year for Kingman (as indicated by the USCB, 2013b), it would be expected that the Kingman and Golden Valley areas would grow by approximately 1,140 and 240 people, respectively over the next four years.

According to the Mercator Mineral's web site, there are no plans for further expansion of Mineral Park Mine in the near future. It is expected that the physical area of the mine and its attendant impacts will also remain fairly stable in the near term (i.e. the anticipated life of the proposed project). There is also an anticipated improvement in ground water quality going into the future.

A new five-lane arterial roadway is planned between Stockton Hill Road and Andy Devine Avenue approximately 0.5 miles north of Jagerson Avenue (ADOT, 2011). I-11 (currently in the early planning stages and not officially designated as I-11) is a planned freeway connecting the cities of Phoenix, Arizona, and Las Vegas, Nevada (ADOT, 2011). The final alignment has not yet been determined, but one alternative being considered is along the existing State Route 93.

4.23.7 Additive, Synergistic, and Countervailing Impacts

Most, if not all, impacts attributable to the proposed action are anticipated to be additive in nature, and there are a few that would be considered countervailing. There is a slight potential for synergistic impacts that would likely be related to release of contaminants and potential bio-accumulation or bio-concentration in the biotic environment, but given the permitted limitations that will regulate the release of such contaminants, such impacts are unlikely.

From the perspective of air quality, the proposed operations will result in an increase in the amount of particulates due to excavation, transport, and processing of the ore. Actual releases in this regard will be subject to regulatory limits imposed by permit requirements. There is a potential for the effect of the releases to add to the effect of releases from the nearby Mineral Park Mine, however. The prevailing winds for the Kingman area for a ten year period (1992 to 2002) were observed to be out of the southwest, on an annual basis (Desert Research Institute, 2013). For seven months of the year during the spring and summer, the wind blows from the southwest and west. For the remaining months in winter, the wind will blow primarily from the north and east. Winds from the southwest and west will blow toward the Mineral Park Mine from the site and then to the Cerbat Mountains to the east. Winds from the north and east will tend to blow from both mines toward Kingman and Golden Valley. There is a slight chance, therefore, that particulates from both mines could be additive and impact mountains to the east and communities to the south. This potential is mitigated by the limitations imposed on emmissions by the permits and the control measures (i.e. operational use of water and suppression agents in operations) imposed therein.

As mentioned, hazardous materials and wastes will likely be generated by the proposed project, at least in small quantities. Similar materials are also likely generated by the Mineral Park Mine, as there are similar processes and activities at both locations. The impacts associated with the generation of wastes from the two sites is are considered insignificant.

The proposed operation has a slight potential to increase demand for housing and infrastructure, any additive effects are considered insignificant. The proposed operation will employ approximately 33 individuals to operate the mine. Very likely, the majority of the positions will require skill sets that are available in the Kingman/Golden Valley and Chloride communities. Some of the positions, like metallurgist, geologist, mining engineer, and mine manager, may have to be recruited from outside areas.

As is evident from comparison of Figures 4.2 and 4.3 showing developmental growth in the area in 1998 and 2011, respectively, there has been encroachment of the Kingman and New Kingman/Butler areas toward the proposed project site. This growth has resulted in an outer limit to the Kingman expansion to the north that has progressed to within 10 miles to the southwest of the project site and for the New Kingmang/Butler area to within 7 miles of the south and west of the project site. This encroachment in a direct sense would increase exposure of the residents to any impacts that may have such far-reaching effects, such as air quality, water quantity and quality, and visual effects. However, both of these areas are on the east side of the Cerbat Mountains and otherwise out of the air, water, and view sheds as well as the ground water basin. Therefore, there is little likelihood that impacts from the proposed operation either singularly or cumulatively could impact this area. Nor would impacts from the continuing development of these areas act cumulatively; with the exception of potential impacts to vegetation, habitat, and wildlife as discussed further below. The mountains to the west of these developments will hinder development toward the project site, but there is potential development opportunity to the north and east.

Most of the land related disturbance for the proposed project will involve the re-disturbance of BLM lands that were disturbed by prior activity. However, there will be additional disturbance to federal lands with the impact to approximately 11 additional acres for utility corridor construction, considered as insignificant.

While there are likely impacts to surface and groundwater from the operations, they are also likely to be insignificant. Given the relative size of the proposed operation and minimal nature of any related impacts if they do occur, the potential for any incremental impacts is considered negligible.

Impacts to groundwater and surface water quantity are similar to quantity with regard to the fact that they will have downgradient or downstream effects. Impacts to surface water quality will be minimal in this regard, as all of the surrounding drainages are ephemeral and the amount of water contained on site for storm water controls is insignificant relative to the size of the drainage basin surrounding the site and all upstream waters will be diverted around the site and into the same washes downstream. Potential impacts to downgradient groundwater users is projected at less than 0.3 feet at a distance of 2,000 to 3,000 feet downstream. The drawdown will further diminish with distance downgradient (assuming that the aquifer is continuous) and will also diminish with time after mining is completed. There is the potential that groundwater withdrawals in the Chloride area and at the Mineral Park Mine could operate in additive fashion with the impact due to withdrawals at the proposed operation. However the impacts from the proposed operation will likely have little incremental effect given that Chloride and Mineral Park are more or less cross gradient and the projected drawdowns would likely not add to the drawdowns from the other areas given the distances involved.

The presence and impoundment of process fluids at the proposed project site will create an attractive nuisance for migratory waterfowl in the area. Although the project is not in an area with an abundance of waterways to support migratory waterfowl, there is the potential for the occasional visitor. This potential impact would have an additive adverse impact in conjunction with the process impoundments at the Mineral Park Mine. However, given that the situation is effectively mitigated through the use of process impoundment cover (e.g. bird balls. etc.) and other adaptive management solutions (e.g. canons and the like) the incremental effect is considered insignificant.

The mine site is currently fenced and access is restricted to recreational use. The proposed operation will be mostly contained within this pre-existing area. Approximately 11 acres of disturbance will be created due to utility construction on federal lands. Other actions in the area of interest for which the proposed disturbance could be considered as additive include recent expansion of the Mineral Park Mine and the expansion of the US 93 alignment in the valley. The incremental addition of the 11 acres to the other combined disturbances is relatively insignificant, especially in consideration of the fact that the utility areas will still be as accessible following construction as they were pre-construction.

Additional soil disturbance will be limited to the construction of utilities in the 11 acres of utility corridor. The overall potential additive effect of the project disturbance is relatively insignificant when considered in conjunction with other disturbances such as the previously mentioned Mineral Park Mine and US 93 construction activities.

As mentioned, the only areas that will be disturbed that have not been disturbed previously will be the approximate 11 acres of utility corridor. Vegetation will be grubbed in advance of construction and areas will be graded and reseeded following construction. The project related impact is additive with respect to other development projects within the geographic area, but the incremental losses due to the new construction at the project will be temporary and likely abate within a few years.

Similarly, most of the disturbance related to the project has already occurred on the site as a result of previous mining activity. Undoubtedly, this has resulted in the loss of habitat for wildlife and wild horses and burros. The additional 11 acres of new disturbance will result in an impact to habitat, as with vegetation, but when the vegetation recurs the habitat potential will also recover. No special status species or sensitive habitats have been identified with the potential for impact. As with vegetation, the loss of vegetation will have an additive effect to other development-related disturbances, but the impacts will be temporary.

Increased traffic on local roads and highways will have impacts in many areas. Additional cars and trucks on the road will have a slight impact on highway traffic but will have a more profound impact on local roadways, in particular the access road on the site. The increased traffic will also affect an increase in particulates as well as a potential increase in wildlife/vehicle encounters (including wild horses and burros). The impacts that result from the proposed operations will be additive to similar impacts from other developmental activities. The incremental impacts are considered insignificant.

As an offset to the impacts discussed above, there are some areas where the proposed action will have a countervailing effect. These include the following:

- The Proposed Action is anticipated to improve the environment due to the removal of the concrete-asbestos pipe and hazardous wastes that may be on site currently.
- The existing heap pile will be reclaimed or otherwise stabilized to significantly diminish PM10 and visual impacts.
- The proposed action will make available a valuable resource (copper) in accordance with the goals of the Mining Act.
- The prospects for additional employment for the area plus the direct and indirect effect of salaries, employee expenditures, and company expenditures will have a positive effect on the local economies.

4.23.8 Cumulative Impacts Summary

The following table provides a summary of the potential cumulative impacts of the proposed project as discussed above. The table presents the impacts with respect to public lands looking at past and present (1989 imagery), proposed operations (2014-2018), reasonably foreseeable actions (2026), and overall cumulative changes. The impacts presented are qualitative, where a minus (-) denotes a negative relative change, a plus (+) indicates a positive effect, and a zero (0) means there is no change or impact.

Table 4. BLM PUBLIC LAND CUMULATIVE IMPACTS

PROJECT DATA	(1998) Aerial View	(2014-2018) Proposed Operations	(2026) Reasonably Foreseeable Actions	Cumulative Change (positive or negative)
Number of Public Land Acres	158 Acres	11 Acres	0 Acres	11 acres
Air Quality	0	-	0	-
Invasive / Non Native Species	0	-	0	-
Cultural Resources	0	0	0	0
Water Quality / Quantity	0	-	0	-
Migratory Birds	0	-	0	-
Recreational Opportunities	0	+	+	+
Soil Erosion	0	-	0	-
Vegetation	0	-	0	0
Wildlife	0	-	0	0
Wild Horses & Burros	0	-	0	0
Summation	0	-7	+1	Stable or Slightly Declining

The above table merely indicates whether or not there is anticipated to be an impact and does not attempt to quantify the magnitude of the impact. As discussed in previous sections, the overall impacts from the proposed project are minor or insignificant on an incremental basis when combined with similar impacts from other activities in the area of interest. Long term cumulative impacts are considered stable or slightly declining largely due to the combination of incrementally minor impacts and the very limited anticipated life of the operation.

4.23.9 Mitigation Summary

Previous mining and milling activities at the Mine Site created surface disturbance of approximately 160 acres (***Figure 1-4***). The proposed Project involves the use of a smaller area (approximately 100 acres) within the larger disturbed area. As stated in ***Table 1***, the corridors to provide utility services to the Mine Site would result in approximately 11 acres of new disturbance; therefore, the cumulativeenvironmental effects or consequences of mining at the Mine Site would be minimal. In fact, Site conditions and safety would be considerably improved over existing, pre-Project conditions if the Proposed Action is adopted and approved.

Various mitigation measures and concurrent reclamation as discussed in the previous sections will be implemented during operation of the Project. Major elements of the reclamation and closure plan are dictated by the regulatory requirements contained in the Arizona Mined Land Reclamation Act, BLM regulations, and the Arizona Department of Environmental Quality Aquifer Protection Permit. The concurrent reclamation approach will result in incremental reclamation as mining operations progress.

It is expected that the reclamation measures will be effective in controlling the potential for unacceptable residual contamination that could come in contact with humans or the environment. Should monitoring indicate that supplemental mitigation measures are required to adequately protect humans and the environment, additional Best Management Practices and other appropriate mitigation measures will be identified and discussed with the appropriate agencies to develop and implement a mitigation plan. ***Table 3*** summarizes resources with the potential to be impacted by the Project and the development and operating practices that will be used to minimize those impacts. ***Table 3*** also describes the operations and post operations monitoring programs that will be implemented to provide information on the effectiveness of operations in controlling impacts to resources.

TABLE 5 – POTENTIAL ENVIRONMENTAL MITIGATION AND MONITORING PRACTICES	
RESOURCE CONCERN OR ISSUE	**PRACTICE**
MITIGATION	
FINDING CULTURAL RESOURCES NOT PREVIOUSLY IDENTIFIED	TRAIN WORKERS TO RECOGNIZE AND AVOID CULTURAL RESOURCES AND IF A POTENTIAL RESOURCE IS ENCOUNTERED TO STOP WORK IN THE VICINITY UNTIL A PROFESSIONAL ARCHAEOLOGIST CAN EVALUATE THE CULTURAL RESOURCE AND IDENTIFY AN APPROPRIATE MITIGATION PLAN.
HARM TO MIGRATORY BIRDS	MIGRATORY BIRD SURVEYS WILL BE CONDUCTED PRIOR TO INSTALLATION OF POWER LINES.
HARM TO MIGRATORY BIRDS	PERCH DISCOURAGERS (OR OTHER DESIGN FEATURES) WILL BE INSTALLED ON ALL NEW POWER LINES.
HARM TO MIGRATORY BIRDS	INSTALL FENCES AND NETS AROUND SOLUTION PONDS.

Harm to Threatened or Endangered Species	If threatened or endangered species are found during monitoring (see below), mitigation measures (such as buffer zones around protected animal burrows or identified plant habitat) will be implemented.
Harm to Threatened or Endangered Species	Install fences and nets around solution ponds.
harm to wildlife and WH&B	Install fences and nets around solution ponds.
Access to the Mine Site	If appropriate, provide rancher with a key to the gate locks.
Operational Monitoring	
Air Quality	Conduct air quality monitoring during operations as necessary per the ADEQ Air Quality Permit.
Presence of Invasive or Noxious Weeds	Inspection for invasive and noxious weeds will be conducted twice yearly during the wetter periods of the year.
Presence of Migratory Birds	Conduct migratory bird monitoring during operations for bird
Presence of Threatened and Endangered Species	Conduct routine biological monitoring to verify no threatened or endangered species.
Post-Operational Monitoring	
Success of Re-Vegetation Program	Twice yearly after cessation of operations, survey re-vegetated areas until the area reaches 70% re-vegetation.
Presence of Invasive or Noxious Weeds	Inspection for invasive and noxious weeds will be conducted twice yearly during the wetter periods of the year.

5.0 Consultation and Coordination

- Federal Agencies
  - BLM KFO
  - U.S. Fish and Wildlife Service
  - U.S. Army Corps of Engineers
  - U.S. Environmental Protection Agency
- State Agencies
  - Arizona Game and Fish Department
  - Arizona Department of Environmental Quality
  - Arizona Department of Transportation
  - Arizona State Mine Inspector's Office
- Native American Tribes
  - Hualapai Tribe
- Local Agencies
  - Mohave County Board of Supervisors
  - Mohave County Development Services and Planning Department
  - Mohave County Economic Development Department
  - Town Council of Chloride
  - Chloride Chamber of Commerce

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